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February 16, 2000

VIA FEDERAL EXPRESS

Jerome P. Kujawa
U.S. Environmental Protection Agency
Region 5
77 West Jackson Boulevard
Chicago, IL 60604-3590

Re: U.S. v. Abitibi Price Corporation, et al.
Case No. 1:99-CV-428

Enclosed please find the following concerning the above referenced matter:

<input type="checkbox"/> Affirmative	<input type="checkbox"/> Objection
<input type="checkbox"/> Answer	<input type="checkbox"/> Order
<input type="checkbox"/> Appearance	<input type="checkbox"/> Pre-Trial Statement
<input type="checkbox"/> Brief	<input type="checkbox"/> Release
<input type="checkbox"/> Cert. of Service	<input type="checkbox"/> Stipulation & Order
<input type="checkbox"/> Complaint	<input checked="" type="checkbox"/> Other - 1) Order dated 2/7/00;
<input type="checkbox"/> Interrogatories to	2) Copy of the Consent Decree
<input type="checkbox"/> Judgment	
<input type="checkbox"/> Letter	
<input type="checkbox"/> Mediation Statement	<input checked="" type="checkbox"/> For your information <i>and file</i>
<input type="checkbox"/> Notice	<input type="checkbox"/> Your response is requested

As we discussed on 2-16-00

Mike Shiparski
MICHAEL L. SHIPARSKI
Assistant United States Attorney

scb
Enclosures

UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF MICHIGAN

00 FEB -7 PM 4:10

UNITED STATES OF AMERICA,

Plaintiff,

Case No. 1:99-CV-428

HON. RICHARD ALAN ENSLEN

v.

ORDER

ABITIBI PRICE CORPORATION, et al.,

Defendants.

On June 11, 1999, the United States of America lodged with this court a proposed Consent Decree. Counsel has advised that on June 24, 1999, pursuant to 42U.S.C. § 9622(d) and 28 C.F.R. § 50.7, notice of the lodging of the Consent Decree was published in the Federal Register, inviting the public to submit comments thereon. Counsel further advises that no public comments have been received.

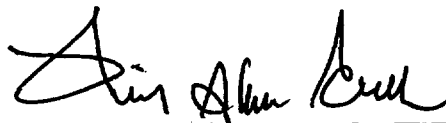
Presently before the court is a motion by the United States of America seeking entry of the Consent Decree.

Notice is hereby given to the parties that the Consent Decree has been signed by this court and shall be entered this date as final judgment in this matter. The United States' Motion for Entry of Consent Decree (Dkt. #12) is **GRANTED**. The Clerk of the Court shall provide the plaintiff with a copy of the first page of the Consent Decree reflecting the file stamp, as well as a copy of the signature page. The United States shall provide copies of the signed Consent Decree to all interested parties.

IT IS SO ORDERED.

Dated:

Feb 7, 2000



RICHARD ALAN ENSLEN
Chief Judge

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IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF MICHIGAN
SOUTHERN DIVISION

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FILED AND RECORDED
U.S. DISTRICT COURT
WESTERN DISTRICT MICH.
BY *rw/* *WB*

UNITED STATES OF AMERICA

Plaintiff,

v.

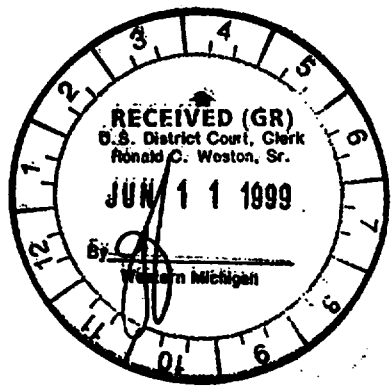
ABITIBI PRICE CORPORATION, et al.,

Defendants.

CIVIL ACTION NO. 1:99cv428

Richard A. Enslen
Chief, U.S. District Judge

CONSENT DECREE



14

UNITED STATES OF AMERICA

V.

Defendants.

CONSENT DECREE

TABLE OF CONTENTS

	<u>Page</u>
I. <u>BACKGROUND</u>	1
II. <u>JURISDICTION</u>	5
III. <u>PARTIES BOUND</u>	5
IV. <u>DEFINITIONS</u>	6
V. <u>GENERAL PROVISIONS</u>	9
VI. <u>PERFORMANCE OF THE WORK BY SETTLING DEFENDANTS</u>	11
VII. <u>REMEDY REVIEW</u>	16
VIII. <u>QUALITY ASSURANCE, SAMPLING, AND DATA ANALYSIS</u>	18
IX. <u>ACCESS AND INSTITUTIONAL CONTROLS</u>	20
X. <u>REPORTING REQUIREMENTS</u>	24
XI. <u>U.S. EPA APPROVAL OF PLANS AND OTHER SUBMISSIONS</u>	26
XII. <u>PROJECT COORDINATORS</u>	28
XIII. <u>ASSURANCE OF ABILITY TO COMPLETE WORK</u>	29
XIV. <u>CERTIFICATION OF COMPLETION</u>	31
XV. <u>EMERGENCY RESPONSE</u>	34
XVI. <u>REIMBURSEMENT OF RESPONSE COSTS</u>	35
XVII. <u>INDEMNIFICATION AND INSURANCE</u>	39
XVIII. <u>FORCE MAJEURE</u>	41
XIX. <u>DISPUTE RESOLUTION</u>	44
XX. <u>STIPULATED PENALTIES</u>	47

XXI. <u>COVENANTS NOT TO SUE BY PLAINTIFF</u>	52
XXII. <u>COVENANTS BY SETTLING DEFENDANTS</u>	56
XXIII. <u>EFFECT OF SETTLEMENT, CONTRIBUTION PROTECTION</u>	58
XXIV. <u>ACCESS TO INFORMATION</u>	60
XXV. <u>RETENTION OF RECORDS</u>	61
XXVI. <u>NOTICES AND SUBMISSIONS</u>	63
XXVII. <u>EFFECTIVE DATE</u>	65
XXVIII. <u>RETENTION OF JURISDICTION</u>	65
XXIX. <u>APPENDICES</u>	65
XXX. <u>COMMUNITY RELATIONS</u>	65
XXXI. <u>MODIFICATION</u>	65
XXXII. <u>LODGING AND OPPORTUNITY FOR PUBLIC COMMENT</u>	66
XXXIII. <u>SIGNATORIES/SERVICE</u>	66

CONSENT DECREE

I. BACKGROUND

A. The United States of America ("United States"), on behalf of the Administrator of the United States Environmental Protection Agency ("U.S. EPA"), filed a complaint in this matter pursuant to Sections 106 and 107 of the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA"), 42 U.S.C. §§ 9606, 9607.

a. The United States in its complaint seeks, inter alia: (1) reimbursement of costs incurred by U.S. EPA and the U.S. Department of Justice for response actions at the Organic Chemical Superfund Site at 3921 Chicago Drive, S.W., in Grandville, Kent County, Michigan, together with accrued interest; and (2) performance of studies and response work by the defendants at the Site consistent with the National Contingency Plan, 40 C.F.R. Part 300 (as amended) ("NCP").

b. In accordance with the NCP and -Section 121(f)(1)(F) of CERCLA, 42 U.S.C. § 9621(f)(1)(F), U.S. EPA notified the State of Michigan (the "State") on June 30, 1998 of negotiations with potentially responsible parties regarding the implementation of the remedial design and remedial action for the Site, and U.S. EPA has provided the State with an opportunity to participate in such negotiations and be a party to this Consent Decree.

B. In accordance with Section 122(j)(1) of CERCLA, 42 U.S.C. § 9622(j)(1), U.S. EPA notified the Michigan Natural Resources Trustee, and the U.S. Department of Interior, the Federal Natural Resources Trustee, in June 1998 of negotiations with potentially responsible parties regarding the release of hazardous substances that may have resulted in injury to the natural

resources under Federal trusteeship and encouraged the trustee(s) to participate in the negotiation of this Consent Decree.

C. The defendants that have entered into this Consent Decree ("Settling Defendants") do not admit any liability to the Plaintiff arising out of the transactions or occurrences alleged in the complaint, nor do they acknowledge that the release or threatened release of hazardous substances at or from the Site constitutes an imminent or substantial endangerment to the public health or welfare or the environment.

D. Pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, U.S. EPA placed the Site on the National Priorities List, set forth at 40 C.F.R. Part 300, Appendix B, by publication in the Federal Register on September 8, 1983, 48 Fed. Reg. 40658.

E. In response to a release or a substantial threat of a release of hazardous substances at or from the Site, U.S. EPA commenced on March 24, 1988, a Remedial Investigation and Feasibility Study ("RI/FS") for the Site pursuant to 40 C.F.R. § 300.430

F. U.S. EPA completed a Phase I Operable Unit Remedial Investigation Report/Focused Feasibility Study ("RI/FFS") on July 17, 1991. The first operable unit ROD, for an interim groundwater remedy to prevent further migration of the contaminated groundwater plume, was signed by U.S. EPA Region 5's Regional Administrator on September 30, 1991. The interim groundwater remedy consisted of installation and operation of a groundwater extraction system in the upper groundwater system (UGS), and a granular activated carbon treatment system.

G. On January 6, 1992, U.S. EPA issued a unilateral administrative order ("UAO") under CERCLA Section 106(a), 42 U.S.C. Section 9606(a) to 175 potentially responsible parties ("PRPs") to implement the first operable unit ROD. Pursuant to the UAO, the respondents thereto designed,

constructed and commenced operation of a groundwater extraction and treatment system as described in the first operable unit ROD. The respondents operated the groundwater extraction and treatment system until the State of Michigan required that the system be shut down in 1997, due to the State's determination that the treated groundwater did not meet certain discharge criteria for discharge to Roy's Creek.

H. On September 21, 1992, a De Minimis Administrative Order on Consent was executed with 100 of the 175 PRPs providing for a payment by the Respondents to U.S. EPA in satisfaction of their liability for costs associated with the first operable unit.

I. U.S. EPA completed a Remedial Investigation ("RI") Report in September 1995, and in March 1996, U.S. EPA completed a Feasibility Study ("FS") for Operable Unit 2 ("OU2"), the Final Remedial Action.

J. Pursuant to Section 117 of CERCLA, 42 U.S.C. § 9617, U.S. EPA published notice of the completion of the FS and of the proposed plan for OU2 on July 11 and 16, 1996, respectively, in two major local newspapers of general circulation. U.S. EPA provided an opportunity for written and oral comments from the public on the proposed plan. A copy of the transcript of the public meeting is available to the public as part of the administrative record upon which the Regional Administrator based the selection of the response action.

K. The decision by U.S. EPA on the second operable unit to be implemented at the Site is embodied in a Record of Decision ("ROD"), executed on February 5, 1997, on which the State had a reasonable opportunity to review and comment and on which the State gave its concurrence on January 17, 1997. The ROD selected the final remedial actions for the Site. The ROD includes U.S. EPA's explanation for any significant differences between the final ROD and the proposed plan.

as well as a responsiveness summary to the public comments. Notice of the final plan was published in accordance with Section 117(b) of CERCLA. The remedial actions selected in the ROD include a final remedial action addressing contaminated groundwater and a remedial action addressing contaminated soil at the Site.

L. On June 30, 1998, U.S. EPA issued "special notice" under Section 122(e) of CERCLA, to identified PRPs with the intent that the recipients negotiate an agreement to perform the remedial actions selected in the ROD and to reimburse the Superfund for past and future response costs incurred by the United States. Certain of those PRPs ("Settling Defendants") have entered into this Consent Decree under which certain of the Settling Defendants ("Performing Settling Defendants") will perform the groundwater remedial action selected in the ROD. Hereinafter the groundwater remedial action selected in the ROD, and to be performed by the Performing Settling Defendants, will be referred to as the "Remedial Action".

M. Based on the information presently available to U.S. EPA, U.S. EPA believes that the Work will be properly and promptly conducted by the Performing Settling Defendants if conducted in accordance with the requirements of this Consent Decree and its appendices.

N. Solely for the purposes of Section 113(j) of CERCLA, the Work to be performed by the Performing Settling Defendants shall constitute a response action taken or ordered by the President.

O. The Parties recognize, and the Court by entering this Consent Decree finds, that this Consent Decree has been negotiated by the Parties in good faith and implementation of this Consent Decree will expedite the cleanup of the Site and will avoid prolonged and complicated litigation between the Parties, and that this Consent Decree is fair, reasonable, and in the public interest.

NOW, THEREFORE, it is hereby Ordered, Adjudged, and Decreed:

II. JURISDICTION

1. This Court has jurisdiction over the subject matter of this action pursuant to 28 U.S.C. §§ 1331 and 1345, and 42 U.S.C. §§ 9606, 9607, and 9613(b). This Court also has personal jurisdiction over the Settling Defendants. Solely for the purposes of this Consent Decree and the underlying complaint, Settling Defendants waive all objections and defenses that they may have to jurisdiction of the Court or to venue in this District. Settling Defendants shall not challenge the terms of this Consent Decree or this Court's jurisdiction to enter and enforce this Consent Decree.

III. PARTIES BOUND

2. This Consent Decree applies to and is binding upon the United States and upon Settling Defendants and their successors and assigns. Any change in ownership or corporate status of a Settling Defendant including, but not limited to, any transfer of assets or real or personal property, shall in no way alter such Settling Defendant's responsibilities under this Consent Decree.

3. Performing Settling Defendants, and Nonperforming Settling Defendants as applicable, shall provide a copy of this Consent Decree to each contractor hired to perform the Work, as defined below, required by this Consent Decree and to each person representing any Settling Defendant with respect to the Site or the Work and shall condition all contracts entered into hereunder upon performance of the Work in conformity with the terms of this Consent Decree. Performing Settling Defendants or their contractors shall provide written notice of the Consent Decree to all subcontractors hired to perform any portion of the Work required by this Consent Decree. Performing Settling Defendants shall nonetheless be responsible for ensuring that their contractors and subcontractors perform the Work contemplated herein in accordance with this

Consent Decree. With regard to the activities undertaken pursuant to this Consent Decree, each contractor and subcontractor shall be deemed to be in a contractual relationship with the Performing Settling Defendants, and Nonperforming Settling Defendants as applicable, within the meaning of Section 107(b)(3) of CERCLA, 42 U.S.C. § 9607(b)(3).

IV. DEFINITIONS

4. Unless otherwise expressly provided herein, terms used in this Consent Decree which are defined in CERCLA or in regulations promulgated under CERCLA shall have the meaning assigned to them in CERCLA or in such regulations. Whenever terms listed below are used in this Consent Decree or in the appendices attached hereto and incorporated hereunder, the following definitions shall apply:

"CERCLA" shall mean the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. §§ 9601 et seq.

"Consent Decree" shall mean this Decree and all appendices attached hereto (listed in Section XXIX). In the event of conflict between this Decree and any appendix, this Decree shall control.

"Day" shall mean a calendar day unless expressly stated to be a working day. "Working day" shall mean a day other than a Saturday, Sunday, or Federal holiday. In computing any period of time under this Consent Decree, where the last day would fall on a Saturday, Sunday, or Federal holiday, the period shall run until the close of business of the next working day.

"U.S. EPA" shall mean the United States Environmental Protection Agency and any successor departments or agencies of the United States.

"Future Response Costs" shall mean all costs, including, but not limited to, direct and indirect costs, that the United States incurs after the effective date of this Consent Decree in reviewing or

developing plans, reports and other items pursuant to this Consent Decree, verifying the Work, or otherwise implementing, overseeing, or enforcing this Consent Decree, including, but not limited to, payroll costs, contractor costs, travel costs, laboratory costs, the costs incurred pursuant to Sections VII, IX (including, but not limited to, the cost of attorney time and any monies paid to secure access and/or to secure institutional controls, including, but not limited to, the amount of just compensation), XV, and Paragraph 89 of Section XXI.

"Interest," shall mean interest at the rate specified for interest on investments of the Hazardous Substance Superfund established under Subchapter A of Chapter 98 of Title 26 of the U.S. Code, compounded on October 1 of each year, in accordance with 42 U.S.C. § 9607(a).

"National Contingency Plan" or "NCP" shall mean the National Oil and Hazardous Substances Pollution Contingency Plan promulgated pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, codified at 40 C.F.R. Part 300, and any amendments thereto.

"Nonperforming Settling Defendants" are those parties listed in Appendix G.

"Operation and Maintenance" or "O & M" shall mean all activities required to maintain the effectiveness of the Remedial Action as required under the Operation and Maintenance Plan, Post Shutdown Monitoring Plan and/or the Post Shutdown Maintenance Plan, approved or developed by U.S. EPA pursuant to this Consent Decree and the Statement of Work (SOW).

"Paragraph" shall mean a portion of this Consent Decree identified by an arabic numeral or an upper case letter.

"Parties" shall mean the United States and the Settling Defendants.

"Past Response Costs" shall mean all costs, including, but not limited to, direct and indirect costs, that the United States paid at or in connection with the Site through the effective date of this

Consent Decree, as well as all Interest on such costs which has accrued or may hereafter accrue pursuant to 42 U.S.C. §9607(a).

"Performance Standards" shall mean the cleanup standards and other measures of achievement of the goals of the Remedial Action, set forth in Sections II, III and Table 1 of the SOW.

"Plaintiff" shall mean the United States of America.

"Performing Settling Defendants" are those parties listed in Appendix E.

"RCRA" shall mean the Solid Waste Disposal Act, as amended, 42 U.S.C. §§ 6901 et seq. (also known as the Resource Conservation and Recovery Act).

"Record of Decision" or "ROD" shall mean the U.S. EPA Record of Decision relating to the Second Operable Unit at the Site signed on February 5, 1997, by the Office of Superfund Division Director, U.S. EPA Region 5, and all attachments thereto. The ROD is attached as Appendix A.

"Remedial Action", for purposes of this Consent Decree, shall mean those activities, except for Operation and Maintenance, to be undertaken by the Performing Settling Defendants to implement the groundwater remedial action (Alternative 10) selected in the ROD, in accordance with the SOW, Remedial Action Work Plans, and other plans approved by U.S. EPA.

"Remedial Action Work Plan" shall mean the document developed pursuant to Paragraph 10 of this Consent Decree and approved by U.S. EPA. and any amendments thereto.

"Section" shall mean a portion of this Consent Decree identified by a roman numeral.

"Settling Defendants" shall mean those Parties identified in Appendix D.

"Site" shall mean the Organic Chemicals, Inc. National Priorities List Superfund Site, encompassing approximately 5 acres, located at 3291 Chicago Drive, S.W., in Grandville, Kent

County, Michigan and depicted generally on the map attached as Appendix C and the aerial extent of soil and groundwater contamination resulting from past releases of hazardous substances and/or petroleum wastes at the Site.

"State" shall mean the State of Michigan.

"Statement of Work" or "SOW" shall mean the statement of work for implementation of the Remedial Action, and Operation and Maintenance at the Site, as set forth in Appendix B to this Consent Decree and any modifications made in accordance with this Consent Decree.

"Supervising Contractor" shall mean the principal contractor retained by the Performing Settling Defendants to supervise and direct the implementation of the Work under this Consent Decree.

"United States" shall mean the United States of America.

"Waste Material" shall mean (1) any "hazardous substance" under Section 101(14) of CERCLA, 42 U.S.C. § 9601(14); (2) any pollutant or contaminant under Section 101(33), 42 U.S.C. § 9601(33); (3) or any "solid waste" under Section 1004(27) of RCRA, 42 U.S.C. § 6903(27).

"Work" shall mean all activities Settling Defendants are required to perform under this Consent Decree except those required by Section XXV (Retention of Records).

V. GENERAL PROVISIONS

5. Objectives of the Parties

The objectives of the Parties in entering into this Consent Decree are to protect public health or welfare or the environment at the Site by the implementation of response actions at the Site by the Performing Settling Defendants, to reimburse response costs of the Plaintiff, and to resolve the claims of Plaintiff against Settling Defendants as provided in this Consent Decree.

6. Commitments by Settling Defendants

a. Performing Settling Defendants shall finance and perform the Work in accordance with this Consent Decree, the ROD, the SOW, and all work plans and other plans, standards, specifications, and schedules set forth herein or developed by Performing Settling Defendants and approved by U.S. EPA pursuant to this Consent Decree. Performing Settling Defendants shall also reimburse the United States for Future Response Costs. Settling Defendants, both Performing Settling Defendants and Nonperforming Performing Settling Defendants, shall reimburse the United States for Past Response Costs plus Interest on such Past Response Costs as provided in paragraph 51.a. of this Consent Decree.

b. The obligations of Performing Settling Defendants to finance and perform the Work and to pay Future Response Costs owed the United States under this Consent Decree are joint and several. In the event of the insolvency or other failure of any one or more Performing Settling Defendants to implement the requirements of this Consent Decree, the remaining Performing Settling Defendants shall complete all such requirements.

c. The obligations of Settling Defendants, both Performing Settling Defendants and Nonperforming Settling Defendants, to reimburse the United States for Past Response Costs plus Interest on such Past Response Costs as provided in paragraph 51.a. of this Consent Decree are joint and several.

7. Compliance With Applicable Law

All activities undertaken by Settling Defendants pursuant to this Consent Decree shall be performed in accordance with the requirements of all applicable federal and state laws and regulations. Settling Defendants must also comply with all applicable or relevant and appropriate

requirements of all Federal and state environmental laws as set forth in the ROD and the SOW. The activities conducted pursuant to this Consent Decree, if approved by U.S. EPA, shall be considered to be consistent with the NCP.

8. Permits

a. As provided in Section 121(e) of CERCLA and Section 300.400(e) of the NCP, no permit shall be required for any portion of the Work conducted entirely on-site (i.e., within the areal extent of contamination or in very close proximity to the contamination and necessary for implementation of the Work). Where any portion of the Work that is not on-site requires a federal or state permit or approval, Performing Settling Defendants shall submit timely and complete applications and take all other actions necessary to obtain all such permits or approvals.

b. The Performing Settling Defendants may seek relief under the provisions of Section XVIII (Force Majeure) of this Consent Decree for any delay in the performance of the Work resulting from a failure to obtain, or a delay in obtaining, any permit required for the Work.

c. This Consent Decree is not, and shall not be construed to be, a permit issued pursuant to any federal or state statute or regulation.

VI. PERFORMANCE OF THE WORK BY SETTLING DEFENDANTS

9. Selection of Supervising Contractor

a. All aspects of the Work to be performed by Performing Settling Defendants pursuant to Sections VI (Performance of the Work by Settling Defendants), VII (Remedy Review), VIII (Quality Assurance, Sampling and Data Analysis), and XV (Emergency Response) of this Consent Decree shall be under the direction and supervision of the Supervising Contractor, the selection of which shall be subject to disapproval by U.S. EPA. Within ten (10) days after the

lodging of this Consent Decree, Performing Settling Defendants shall notify U.S. EPA in writing of the name, title, and qualifications of any contractor proposed to be the Supervising Contractor. U.S. EPA will issue a notice of disapproval or an authorization to proceed. If at any time thereafter, Performing Settling Defendants propose to change a Supervising Contractor, Performing Settling Defendants shall give such notice to U.S. EPA and must obtain an authorization to proceed from U.S. EPA, before the new Supervising Contractor performs, directs, or supervises any Work under this Consent Decree.

b. If U.S. EPA disapproves a proposed Supervising Contractor, U.S. EPA will notify Performing Settling Defendants in writing. Performing Settling Defendants shall submit to U.S. EPA a list of contractors, including the qualifications of each contractor, that would be acceptable to them within thirty (30) days of receipt of U.S. EPA's disapproval of the contractor previously proposed. U.S. EPA will provide written notice of the names of any contractor(s) that it disapproves and an authorization to proceed with respect to any of the other contractors. Performing Settling Defendants may select any contractor from that list that is not disapproved and shall notify U.S. EPA of the name of the contractor selected within twenty-one (21) days of U.S. EPA's authorization to proceed.

c. If U.S. EPA fails to provide written notice of its authorization to proceed or disapproval as provided in this Paragraph and this failure prevents the Performing Settling Defendants from meeting one or more deadlines in a plan approved by the U.S. EPA pursuant to this Consent Decree, Performing Settling Defendants may seek relief under the provisions of Section XVIII (Force Majeure) hereof.

10. Remedial Action.

a. Within sixty (60) days after the U.S. EPA's issuance of an authorization to proceed, Performing Settling Defendants shall submit to U.S. EPA and the State, a work plan for the performance of the Remedial Action at the Site ("Remedial Action Work Plan"). The Remedial Action Work Plan shall provide for implementation of the Remedial Action and achievement of the Performance Standards, in accordance with this Consent Decree, the ROD and the SOW. The Remedial Action Work Plan shall include the elements set forth in Sections III.A. or III.B. and Section IV of the SOW. The Remedial Action Work Plan also shall include a schedule for implementation of all Remedial Action tasks identified in the SOW and shall identify the initial formulation of the Settling Defendants' Remedial Action Project Team (including, but not limited to, the Supervising Contractor).

b. If the Performing Settling Defendants determine to request U.S. EPA approval of an Alternate Point of Compliance remedial action, the Remedial Action work Plan shall include a plan for demonstrating the appropriate Alternate point of Compliance ("APC Demonstration Plan"). The APC Demonstration Plan shall address meeting the criteria for approval of an APC as set forth in the ROD and Section III.B of the SOW.

c. Upon its approval by U.S. EPA, the Remedial Action Work Plan shall be incorporated into and become enforceable under this Consent Decree. At the same time as they submit the Remedial Action Work Plan, Performing Settling Defendants shall submit to U.S. EPA and the State a Health and Safety Plan for field activities required by the Remedial Action Work Plan which conforms to the applicable Occupational Safety and Health Administration and U.S. EPA requirements including, but not limited to, 29 C.F.R. § 1910.120.

d. Upon approval of the Remedial Action Work Plan by U.S. EPA, Performing Settling Defendants shall implement the activities required under the Remedial Action Work Plan. The Performing Settling Defendants shall submit to U.S. EPA all plans, submittals, or other deliverables required under the approved Remedial Action Work Plan in accordance with the approved schedule for review and approval pursuant to Section XI (U.S. EPA Approval of Plans and Other Submissions). Unless otherwise directed by U.S. EPA, Performing Settling Defendants shall not commence physical Remedial Action activities at the Site prior to approval of the Remedial Action Work Plan.

11. The Performing Settling Defendants shall continue to implement the Remedial Action until the Performance Standards are achieved and for so long thereafter as is otherwise required under this Consent Decree.

12. Modification of the SOW or Related Work Plans.

a. If U.S. EPA determines that modification to the work specified in the SOW and/or in work plans developed pursuant to the SOW is necessary to achieve and maintain the Performance Standards or to carry out and maintain the effectiveness of the remedy set forth in the ROD, U.S. EPA may require that such modification be incorporated in the SOW and/or such work plans. Provided, however, that a modification may only be required pursuant to this Paragraph to the extent that it is consistent with the scope of the remedy selected in the ROD.

b. For the purposes of this Paragraph 12 and Paragraphs 47 and 48 only, the "scope of the remedy selected in the ROD" is: 1) operation and maintenance of a groundwater extraction and treatment system or, if Alternate Points of Compliance are approved by U.S. EPA, utilization of natural attenuation, to attain and maintain Performance Standards set forth in Table

1 of the SOW throughout the plume, as set forth in the SOW at Section Ii; 2) implementation of institutional controls to prevent human exposure to groundwater contaminants exceeding said Performance Standards; and 3) implementation of a groundwater monitoring program in compliance with Section III.G. of the SOW.

c. If Performing Settling Defendants object to EPA's determination that the conditions specified in the ROD and in the SOW at Section II.B. are not met or if Settling Defendants object to any modification determined by U.S. EPA to be necessary pursuant to this Paragraph, they may seek dispute resolution pursuant to Section XIX (Dispute Resolution) Paragraph 67 (Record Review). The SOW and/or related work plans shall be modified in accordance with final resolution of the dispute.

d. Performing Settling Defendants shall implement any work required by any modifications incorporated in the SOW and/or in work plans developed pursuant to the SOW in accordance with this Paragraph.

e. Nothing in this Paragraph shall be construed to limit U.S. EPA's authority to require performance of further response actions as otherwise provided in this Consent Decree.

13. Settling Defendants acknowledge and agree that nothing in this Consent Decree, the SOW, or the Remedial Design or Remedial Action Work Plans constitutes a warranty or representation of any kind by Plaintiff that compliance with the work requirements set forth in the SOW and the Work Plans will achieve the Performance Standards.

14. Performing Settling Defendants shall, prior to any off-Site shipment of Waste Material from the Site to an out-of-state waste management facility, provide written notification to the appropriate state environmental official in the receiving facility's state and to the U.S. EPA

Project Coordinator of such shipment of Waste Material. However, this notification requirement shall not apply to any off-Site shipments when the total volume of all such shipments will not exceed 10 cubic yards.

a. The Performing Settling Defendants shall include in the written notification the following information, where available: (1) the name and location of the facility to which the Waste Material are to be shipped; (2) the type and quantity of the Waste Material to be shipped; (3) the expected schedule for the shipment of the Waste Material; and (4) the method of transportation. The Performing Settling Defendants shall notify the state in which the planned receiving facility is located of major changes in the shipment plan, such as a decision to ship the Waste Material to another facility within the same state, or to a facility in another state.

b. The identity of the receiving facility and state will be determined by the Performing Settling Defendants following the award of the contract for Remedial Action construction. The Performing Settling Defendants shall provide the information required by Paragraph 14a as soon as practicable after the award of the contract and before the Waste Material is actually shipped.

VII. REMEDY REVIEW

15. Periodic Review. Performing Settling Defendants shall conduct any studies and investigations as requested by U.S. EPA, in order to permit U.S. EPA to conduct reviews of whether the Remedial Action is protective of human health and the environment at least every five years as required by Section 121(c) of CERCLA and any applicable regulations.

16. U.S. EPA Selection of Further Response Actions. If U.S. EPA determines, at any time, that the Remedial Action is not protective of human health and the environment, U.S. EPA

may select further response actions for the Site in accordance with the requirements of CERCLA and the NCP.

17. Opportunity To Comment. Settling Defendants and, if required by Sections 113(k)(2) or 117 of CERCLA, the public, will be provided with an opportunity to comment on any further response actions proposed by U.S. EPA as a result of the review conducted pursuant to Section 121(c) of CERCLA, and to submit written comments for the record during the comment period.

18. Settling Defendants' Obligation To Perform Further Response Actions. If U.S. EPA selects further response actions for the Site, the Settling Defendants shall undertake such further response actions to the extent that the reopener conditions in Paragraph 85 or Paragraph 86 (United States' reservations of liability based on unknown conditions or new information) are satisfied. Settling Defendants may invoke the procedures set forth in Section XIX (Dispute Resolution) to dispute (1) U.S. EPA's determination that the reopener conditions of Paragraph 85 or Paragraph 86 of Section XXI (Covenants Not To Sue by Plaintiff) are satisfied, (2) U.S. EPA's determination that the Remedial Action is not protective of human health and the environment, or (3) U.S. EPA's selection of the further response actions. Disputes pertaining to whether the Remedial Action is protective or to U.S. EPA's selection of further response actions shall be resolved pursuant to Paragraph 67 (record review).

19. Submissions of Plans. If Settling Defendants are required to perform the further response actions pursuant to Paragraph 18, they shall submit a plan for such work to U.S. EPA for approval in accordance with the procedures set forth in Section VI (Performance of the Work by Settling Defendants) and shall implement the plan approved by U.S. EPA in accordance with the provisions of this Decree.

VIII. QUALITY ASSURANCE, SAMPLING, AND DATA ANALYSIS

20. Performing Settling Defendants shall use quality assurance, quality control, and chain of custody procedures for all treatability, design, compliance and monitoring samples in accordance with "U.S. EPA Requirements for Quality Assurance Project Plans for Environmental Data Operation," (U.S. EPA QA/R5; "Preparing Perfect Project Plans," (U.S. EPA /600/988/087)), and subsequent amendments to such guidelines upon notification by U.S. EPA to Performing Settling Defendants of such amendment. Amended guidelines shall apply only to procedures conducted after such notification. Prior to the commencement of any monitoring project under this Consent Decree, Performing Settling Defendants shall submit to U.S. EPA for approval, after a reasonable opportunity for review and comment by the State, a Quality Assurance Project Plan ("QAPP") that is consistent with the SOW, the NCP and applicable U.S. EPA guidance documents. If relevant to the proceeding, the Parties agree that validated sampling data generated in accordance with the QAPP(s) and reviewed and approved by U.S. EPA shall be admissible as evidence, without objection, in any proceeding under this Decree. Performing Settling Defendants shall ensure that U.S. EPA personnel and its authorized representatives are allowed access at reasonable times to all laboratories utilized by Performing Settling Defendants in implementing this Consent Decree. In addition, Performing Settling Defendants shall ensure that such laboratories shall analyze all samples submitted by U.S. EPA pursuant to the QAPP for quality assurance monitoring. Performing Settling Defendants shall ensure that the laboratories they utilize for the analysis of samples taken pursuant to this Decree perform all analyses according to accepted U.S. EPA methods. Accepted U.S. EPA methods consist of those methods which are documented in the "Contract Lab Program Statement of Work for Inorganic Analysis" and the "Contract Lab Program Statement of Work for Organic

Analysis," dated February 1988, and any amendments made thereto during the course of the implementation of this Decree. Performing Settling Defendants shall ensure that all laboratories they use for analysis of samples taken pursuant to this Consent Decree participate in a U.S. EPA or U.S. EPA-equivalent QA/QC program. Performing Settling Defendants shall ensure that all field methodologies utilized in collecting samples for subsequent analysis pursuant to this Decree will be conducted in accordance with the procedures set forth in the QAPP approved by U.S. EPA.

21. Upon request, the Performing Settling Defendants shall allow split or duplicate samples to be taken by U.S. EPA or its authorized representatives. Performing Settling Defendants shall notify U.S. EPA not less than twenty-eight (28) days in advance of any sample collection activity unless shorter notice is agreed to by U.S. EPA. In addition, U.S. EPA shall have the right to take any additional samples that U.S. EPA deem necessary. Upon request, U.S. EPA shall allow the Performing Settling Defendants to take split or duplicate samples of any samples it takes as part of the Plaintiff's oversight of the Performing Settling Defendants' implementation of the Work.

22. Performing Settling Defendants shall submit to U.S. EPA five (5) copies of the results of all sampling and/or tests or other data obtained or generated by or on behalf of Performing Settling Defendants with respect to the Site and/or the implementation of this Consent Decree, unless U.S. EPA agrees otherwise.

23. Notwithstanding any provision of this Consent Decree, the United States hereby retains all of its information gathering and inspection authorities and rights, including enforcement actions related thereto, under CERCLA, RCRA and any other applicable statutes or regulations.

IX. ACCESS AND INSTITUTIONAL CONTROLS

24. If the Site, or any other property where access and/or land/water use restrictions are needed to implement this Consent Decree is owned or controlled by any of the Settling Defendants, such Settling Defendants shall:

a. commencing upon the date of lodging of this Consent Decree, provide the United States and its representatives, including U.S. EPA and its contractors, access at all reasonable times to the Site, or such other property, for the purpose of conducting any activity related to this Consent Decree including, but not limited to, the following activities:

- i. Monitoring the Work;
- ii. Verifying any data or information submitted to the United States or the State;
- iii. Conducting investigations relating to contamination at or near the Site;
- iv. Obtaining samples;
- v. Assessing the need for, planning, or implementing additional response actions at or near the Site;
- vi. Implementing the Work pursuant to Paragraph 84 of this Consent Decree;
- vii. Inspecting and copying records, operating logs, contracts, or other documents maintained or generated by Settling Defendants or their agents, consistent with Section XXIV (Access to Information);

viii. Assessing Settling Defendants' compliance with this Consent Decree;
and

ix. Determining whether the Site or other property is being used in a manner that is prohibited or restricted, or that may need to be prohibited or restricted, by or pursuant to this Consent Decree;

b. commencing on the date of lodging of this Consent Decree, refrain from using the Site, or such other property, in any manner that would interfere with or adversely affect the integrity or protectiveness of the remedial measures to be implemented pursuant to this Consent Decree. Such restrictions include, but are not limited to, not disturbing the solidified soil, groundwater pump and treat system, or groundwater monitoring wells.

25. If the Site, or any other property where access and/or land/water use restrictions are needed to implement this Consent Decree, is owned or controlled by persons other than any of the Performing Settling Defendants, Performing Settling Defendants shall use best efforts to secure from such persons:

a. an agreement to provide access thereto for Performing Settling Defendants, as well as for the United States and its representatives, including, but not limited to, their contractors, for the purpose of conducting any activity related to this Consent Decree, including, but not limited to, those activities listed in Paragraph 24.a. of this Consent Decree;

b. an agreement, enforceable by the Performing Settling Defendants and the United States to abide by the obligations and restrictions established by Paragraph 24.b. of this Consent Decree, or that are otherwise necessary to implement, ensure noninterference with, or ensure the protectiveness of the remedial measures to be performed pursuant to this Consent Decree; and

c. the execution and recordation in the Recorder's Office of Kent County, Michigan, of restrictive covenants running with the land, that (i) grant a right of access for the purpose of conducting any activity related to this Consent Decree including, but not limited to, those activities listed in Paragraph 24.a. of this Consent Decree, and (ii) grant the right to enforce the land/water use restrictions listed in Paragraph 24.a. of this Consent Decree, or other restrictions that U.S. EPA determines are necessary to implement, ensure non-interference with, or ensure the protectiveness of the remedial measures to be performed pursuant to this Consent Decree. The access rights and/or rights to enforce land/water use restrictions shall be granted to the Performing Settling Defendants and their representatives and/or other appropriate grantees deemed necessary by the Performing Settling Parties or U.S. EPA. Within forty-five (45) days of entry of this Consent Decree, Performing Settling Defendants shall submit to U.S. EPA for review and approval with respect to such property or properties:

- (i) a draft restrictive covenant, in substantially the form attached hereto as Appendix F that is enforceable under the laws of the State of Michigan; and
- (ii) a current ALTA title commitment or report for each property affected by the Remedial Action prepared in a manner acceptable to U.S. EPA (the "Title Commitment").

Within fifteen (15) days of U.S. EPA's approval and acceptance of the form of the restrictive covenant and Title Commitments, Performing Settling Defendants shall update the Title Commitments and, if it is determined that nothing has occurred since the effective date of the Title Commitments to affect the title adversely, Performing Settling Defendants shall use their best efforts to cause the restrictive covenants to be recorded with the Recorder's Office of Kent County, Michigan. Within thirty (30) days of the recording of the restrictive covenant Performing Settling

Defendants shall provide U.S. EPA with a certified copy of each original recorded restrictive covenant showing the clerk's recording stamps, as well as a final title policy insuring priority of the restrictive covenant as of the date of recording, subject only to prior liens and encumbrances previously approved by U.S. EPA. Performing Settling Defendants shall verify compliance with each restrictive covenant and take all appropriate legal action necessary to enforce the restrictive covenant when deemed necessary by EPA. Performing Settling Defendants will ensure that each restrictive covenant remains in effect until either: (1) EPA notification pursuant to paragraph 48.b. of the Consent Decree that the Work has been performed; or (2) EPA approval, after consultation with the Michigan Department of Environmental Quality, for removal or modification of one or more restrictive covenants. Performing Settling Defendants shall annually report to EPA on the anniversary date of the entry of the Consent Decree the status of all existing restrictive covenants until EPA notification pursuant to paragraph 48.b. of the Consent Decree that the Work has been performed.

26. For purposes of this Paragraph 25 of this Consent Decree, "best efforts" includes the payment of reasonable sums of money in consideration of access, access easements, land/water use restrictions, and/or restrictive easements, except that there shall be no requirement to pay Total Petroleum Company and its predecessors and successors in interest, including Ultramar Diamond Shamrock (collectively "Total Petroleum Company") or Organic Chemical Company, Inc. If any access or land/water use restriction agreements required by Paragraphs 25.a. or 25.b. of this Consent Decree are not obtained within forty-five (45) days of the date of entry of this Consent Decree, or any restrictive easements required by Paragraph 25.c. of this Consent Decree are not submitted to U.S. EPA in draft form within forty-five (45) days of the date of entry of this Consent

Decree, Performing Settling Defendants shall promptly notify the United States in writing, and shall include in that notification a summary of the steps that Performing Settling Defendants have taken to attempt to comply with Paragraph 25 of this Consent Decree. The United States may, as it deems appropriate, assist Performing Settling Defendants in obtaining access or land/water use restrictions, either in the form of contractual agreements or in the form of easements or restrictive covenants running with the land. Performing Settling Defendants shall reimburse the United States in accordance with the procedures in Section XVI (Reimbursement of Response Costs), for all costs incurred, direct and indirect, by the United States in obtaining such access and/or land/water use restrictions including, but not limited to, the cost of attorney time and the amount of monetary consideration paid or just compensation. If the U.S. EPA determines that land/water use restrictions in the form of state or local laws, regulations, ordinances, or other governmental controls are needed to implement the remedy selected in the ROD, ensure the integrity and protectiveness thereof, or ensure non-interference therewith, Performing Settling Defendants shall cooperate with U.S. EPA's efforts to secure such governmental controls.

27. Notwithstanding any provision of this Consent Decree, the United States retains all of its access authorities and rights, as well as of its rights to require land/water use restrictions, including enforcement authorities related thereto, under CERCLA, RCRA and any other applicable statute or regulations.

X. REPORTING REQUIREMENTS

28. In addition to any other requirement of this Consent Decree, Performing Settling Defendants shall submit to U.S. EPA and the State five (5) copies of written progress reports as

required by the SOW. If requested by U.S. EPA, Performing Settling Defendants shall also provide briefings for U.S. EPA to discuss the progress of the Work.

29. The Performing Settling Defendants shall notify U.S. EPA of any change in the schedule described in the progress report for the performance of any activity, including, but not limited to, data collection and implementation of work plans, no later than seven (7) days prior to the performance of the activity.

30. Upon the occurrence of any event during performance of the Work that Performing Settling Defendants are required to report pursuant to Section 103 of CERCLA or Section 304 of the Emergency Planning and Community Right-to-know Act (EPCRA), Performing Settling Defendants shall within twenty-four (24) hours of the onset of such event orally notify the U.S. EPA Project Coordinator or, in the event of the unavailability of the U.S. EPA Project Coordinator, the Alternate U.S. EPA Project Coordinator, or, in the event that neither the U.S. EPA Project Coordinator or Alternate U.S. EPA Project Coordinator is available, the Superfund Emergency Response Section, Region 5, United States Environmental Protection Agency in Chicago. These reporting requirements are in addition to the reporting required by CERCLA Section 103 or EPCRA Section 304.

31. Within twenty (20) days of the onset of such an event, Performing Settling Defendants shall furnish to Plaintiff a written report, signed by the Performing Settling Defendants' Project Coordinator, setting forth the events which occurred and the measures taken, and to be taken, in response thereto. Within thirty (30) days of the conclusion of such an event, Performing Settling Defendants shall submit a report setting forth all actions taken in response thereto.

32. Settling Defendants shall submit five (5) copies of all plans, reports, and data required by the SOW, the Remedial Action Work Plan, or any other approved plans to U.S. EPA in

accordance with the schedules set forth in such plans. Performing Settling Defendants shall simultaneously submit five (5) copies of all such plans, reports, and data to the State.

33. All reports and other documents submitted by Performing Settling Defendants to U.S. EPA (other than the progress reports referred to above) which purport to document Performing Settling Defendants' compliance with the terms of this Consent Decree shall be signed by an authorized representative of the Performing Settling Defendants.

XI. U.S. EPA APPROVAL OF PLANS AND OTHER SUBMISSIONS

34. After review of any plan, report or other item which is required to be submitted for approval pursuant to this Consent Decree, U.S. EPA, after reasonable opportunity for review and comment by the State, shall: (a) approve, in whole or in part, the submission; (b) approve the submission upon specified conditions; (c) modify the submission to cure the deficiencies; (d) disapprove, in whole or in part, the submission, directing that the Performing Settling Defendants modify the submission; or (e) any combination of the above. However, U.S. EPA shall not modify a submission without first providing Performing Settling Defendants at least one notice of deficiency and an opportunity to cure within thirty (30) days, except where to do so would cause serious disruption to the Work or where previous submissions have been disapproved due to material defects and the deficiencies in the submission under consideration indicate a bad faith lack of effort to submit an acceptable deliverable.

35. In the event of approval, approval upon conditions, or modification by U.S. EPA, pursuant to Paragraph 34(a),(b), or (c), Performing Settling Defendants shall proceed to take any action required by the plan, report, or other item, as approved or modified by U.S. EPA subject only

to their right to invoke the Dispute Resolution procedures set forth in Section XIX (Dispute Resolution) with respect to the modifications or conditions made by U.S. EPA. In the event that U.S. EPA modifies the submission to cure the deficiencies pursuant to Paragraph 34(c) and the submission has a material defect, U.S. EPA retains its right to seek stipulated penalties, as provided in Section XX (Stipulated Penalties).

36. The following provisions shall govern the notice of disapproval.

a. Upon receipt of a notice of disapproval pursuant to Paragraph (d), Performing Settling Defendants shall, within fifteen (15) days or such longer time as specified by U.S. EPA in such notice, correct the deficiencies and resubmit the plan, report, or other item for approval. Any stipulated penalties applicable to the submission, as provided in Section XX, shall accrue during the fifteen(15)-day period or otherwise specified period but shall not be payable unless the resubmission is disapproved or modified due to a material defect as provided in Paragraphs 37 and 38.

b. Notwithstanding the receipt of a notice of disapproval pursuant to Paragraph 34(d), Performing Settling Defendants shall proceed, at the direction of U.S. EPA, to take any action required by any non-deficient portion of the submission. Implementation of any non-deficient portion of a submission shall not relieve Settling Defendants of any liability for stipulated penalties under Section XX (Stipulated Penalties).

37. In the event that a resubmitted plan, report or other item, or portion thereof, is disapproved by U.S. EPA, U.S. EPA may again require the Performing Settling Defendants to correct the deficiencies, in accordance with the preceding Paragraphs. U.S. EPA also retains the right to modify or develop the plan, report or other item. Performing Settling Defendants shall implement

any such plan, report, or item as modified or developed by U.S. EPA, subject only to their right to invoke the procedures set forth in Section XIX (Dispute Resolution).

38. If upon resubmission, a plan, report, or item is disapproved or modified by U.S. EPA due to a material defect, Performing Settling Defendants shall be deemed to have failed to submit such plan, report, or item timely and adequately unless the Performing Settling Defendants invoke the dispute resolution procedures set forth in Section XIX (Dispute Resolution) and U.S. EPA's action is overturned pursuant to that Section. The provisions of Section XIX (Dispute Resolution) and Section XX (Stipulated Penalties) shall govern the implementation of the Work and accrual and payment of any stipulated penalties during Dispute Resolution. If U.S. EPA's disapproval or modification is upheld, stipulated penalties shall accrue for such violation from the date on which the initial submission was originally required, as provided in Section XX.

39. All plans, reports, and other items required to be submitted to U.S. EPA under this Consent Decree shall, upon approval or modification by U.S. EPA, be enforceable under this Consent Decree. In the event U.S. EPA approves or modifies a portion of a plan, report, or other item required to be submitted to U.S. EPA under this Consent Decree, the approved or modified portion shall be enforceable under this Consent Decree.

XII. PROJECT COORDINATORS

40. Within twenty (20) days of lodging this Consent Decree, Performing Settling Defendants and U.S. EPA will notify each other, in writing, of the name, address and telephone number of their respective designated Project Coordinators and Alternate Project Coordinators. If a Project Coordinator or Alternate Project Coordinator initially designated is changed, the identity of the successor will be given to the other parties at least five (5) working days before the changes

occur, unless impracticable, but in no event later than the actual day the change is made. The Performing Settling Defendants' Project Coordinator shall be subject to disapproval by U.S. EPA and shall have the technical expertise sufficient to adequately oversee all aspects of the Work. The Performing Settling Defendants' Project Coordinator shall not be an attorney for any of the Settling Defendants in this matter. He or she may assign other representatives, including other contractors, to serve as a Site representative for oversight of performance of daily operations during remedial activities.

41. Plaintiff may designate other representatives, including, but not limited to, U.S. EPA employees, and federal contractors and consultants, to observe and monitor the progress of any activity undertaken pursuant to this Consent Decree. U.S. EPA's Project Coordinator and Alternate Project Coordinator shall have the authority lawfully vested in a Remedial Project Manager (RPM) and an On-Scene Coordinator (OSC) by the National Contingency Plan, 40 C.F.R. Part 300. In addition, U.S. EPA's Project Coordinator or Alternate Project Coordinator shall have authority, consistent with the National Contingency Plan, to halt any Work required by this Consent Decree and to take any necessary response action when she or he determines that conditions at the Site constitute an emergency situation or may present an immediate threat to public health or welfare or the environment due to release or threatened release of Waste Material.

42. U.S. EPA's Project Coordinator and the Performing Settling Defendants Project Coordinator will confer periodically as requested by EPA's Project Coordinator.

XIII. ASSURANCE OF ABILITY TO COMPLETE WORK

43. Within thirty (30) days of entry of this Consent Decree, Performing Settling Defendants shall establish and maintain financial security in the amount of \$2,500,000 in one or more of the following forms:

- (a) A surety bond guaranteeing performance of the Work;
- (b) One or more irrevocable letters of credit;
- (c) A trust fund;
- (d) A guarantee to perform the Work by one or more parent corporations or subsidiaries, or by one or more unrelated corporations that have a substantial business relationship with at least one of the Settling Defendants; or
- (e) A demonstration that one or more of the Performing Settling Defendants satisfy the requirements of 40 C.F.R. Part 264.143(f).

44. If the Performing Settling Defendants seek to demonstrate the ability to complete the Work through a guarantee by a third party pursuant to Paragraph 43(d) of this Consent Decree, Performing Settling Defendants shall demonstrate that the guarantor satisfies the requirements of 40 C.F.R. Part 264.143(f). If Performing Settling Defendants seek to demonstrate their ability to complete the Work by means of the financial test or the corporate guarantee pursuant to Paragraph 43(d) or (e), they shall resubmit sworn statements conveying the information required by 40 C.F.R. Part 264.143(f) annually, on the anniversary of the effective date of this Consent Decree. In the event that U.S. EPA determines at any time that the financial assurances provided pursuant to this Section are inadequate, Performing Settling Defendants shall, within thirty (30) days of receipt of notice of U.S. EPA's determination, obtain and present to U.S. EPA for approval one of the other forms of financial assurance listed in Paragraph 43 of this Consent Decree. Performing Settling Defendants'

inability to demonstrate financial ability to complete the Work shall not excuse performance of any activities required under this Consent Decree.

45. If Performing Settling Defendants can show that the estimated cost to complete the remaining Work has diminished below the amount set forth in Paragraph 43 above after entry of this Consent Decree, Performing Settling Defendants may, on any anniversary date of entry of this Consent Decree, or at any other time agreed to by the Parties, reduce the amount of the financial security provided under this Section to the estimated cost of the remaining work to be performed. Performing Settling Defendants shall submit a proposal for such reduction to U.S. EPA, in accordance with the requirements of this Section, and may reduce the amount of the security upon approval by U.S. EPA. In the event of a dispute, Performing Settling Defendants may reduce the amount of the security in accordance with the final administrative or judicial decision resolving the dispute.

46. Performing Settling Defendants may change the form of financial assurance provided under this Section at any time, upon notice to and approval by U.S. EPA, provided that the new form of assurance meets the requirements of this Section. In the event of a dispute, Performing Settling Defendants may change the form of the financial assurance only in accordance with the final administrative or judicial decision resolving the dispute.

XIV. CERTIFICATION OF COMPLETION

47. Completion of the Remedial Action

a. Within ninety (90) days after Performing Settling Defendants conclude that the Remedial Action has been fully performed and the Performance Standards have been attained, they shall submit a written report requesting certification that the Remedial action has been

completed to Plaintiff for approval, pursuant to Section XI (U.S. EPA Approval of Plans and Other Submissions). In the report, the Performing Settling Defendants' Project Coordinator shall state that the Remedial Action has been completed in full satisfaction of the requirements of this Consent Decree. The report shall contain the following statement, signed by a responsible corporate official of a Performing Settling Defendant or the Performing Settling Defendants' Project Coordinator:

"To the best of my knowledge, after thorough investigation, I certify that the information contained in or accompanying this submission is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

If, after receipt and review of the written report, U.S. EPA determines that the Remedial Action or any portion thereof has not been completed in accordance with this Consent Decree or that the Performance Standards have not been achieved, U.S. EPA will notify Performing Settling Defendants in writing of the activities that must be undertaken by Performing Settling Defendants pursuant to this Consent Decree to complete the Remedial Action and achieve the Performance Standards. Provided, however, that U.S. EPA may only require Performing Settling Defendants to perform such activities pursuant to this Paragraph to the extent that such activities are consistent with the "scope of the remedy selected in the ROD," as that term is defined in Paragraph 12.b. U.S. EPA will set forth in the notice a schedule for performance of such activities consistent with the Consent Decree and the SOW or require the Performing Settling Defendants to submit a schedule to U.S. EPA for approval pursuant to Section XI (U.S. EPA Approval of Plans and Other Submissions). Performing Settling Defendants shall perform all activities described in the notice in accordance with

the specifications and schedules established pursuant to this Paragraph, subject to their right to invoke the dispute resolution procedures set forth in Section XIX (Dispute Resolution).

b. If U.S. EPA concludes, based on the initial or any subsequent report requesting Certification of Completion and after a reasonable opportunity for review and comment by the State, that the Remedial Action has been performed in accordance with this Consent Decree and that the Performance Standards have been achieved, U.S. EPA will so certify in writing to Performing Settling Defendants. This certification shall constitute the Certification of Completion of the Remedial Action for purposes of this Consent Decree, including, but not limited to, Section XXI (Covenants Not to Sue by Plaintiff). Certification of Completion of the Remedial Action shall not affect Settling Defendants' obligations under this Consent Decree.

48. Completion of the Work (including O & M)

a. Within ninety (90) days after Performing Settling Defendants conclude that all phases of the Work (including O & M), have been fully performed, Performing Settling Defendants shall submit a written report by the Performing Settling Defendants' Project Coordinator stating that the Work has been completed in full satisfaction of the requirements of this Consent Decree. The report shall contain the following statement, signed by a responsible corporate official of a Performing Settling Defendant or the Performing Settling Defendants' Project Coordinator:

"To the best of my knowledge, after thorough investigation, I certify that the information contained in or accompanying this submission is true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

If, after review of the written report, U.S. EPA determines that any portion of the Work has not been completed in accordance with this Consent Decree, U.S. EPA will notify Performing Settling Defendants in writing of the activities that must be undertaken by Performing Settling Defendants pursuant to this Consent Decree to complete the Work. Provided, however, that U.S. EPA may only require Performing Settling Defendants to perform such activities pursuant to this Paragraph to the extent that such activities are consistent with the "scope of the remedy selected in the ROD," as that term is defined in Paragraph 12.b. U.S. EPA will set forth in the notice a schedule for performance of such activities consistent with the Consent Decree and the SOW or require the Performing Settling Defendants to submit a schedule to U.S. EPA for approval pursuant to Section XI (U.S. EPA Approval of Plans and Other Submissions). Performing Settling Defendants shall perform all activities described in the notice in accordance with the specifications and schedules established therein, subject to their right to invoke the dispute resolution procedures set forth in Section XIX (Dispute Resolution).

b. If U.S. EPA concludes, based on the initial or any subsequent request for Certification of Completion by Performing Settling Defendants and after a reasonable opportunity for review and comment by the State, that the Work has been performed in accordance with this Consent Decree, U.S. EPA will so notify the Performing Settling Defendants in writing.

XV. EMERGENCY RESPONSE

49. In the event of any action or occurrence during the performance of the Work which causes or threatens a release of Waste Material from the Site that constitutes an emergency situation or may present an immediate threat to public health or welfare or the environment, Performing Settling Defendants shall, subject to Paragraph 50, immediately take all appropriate action to

prevent, abate, or minimize such release or threat of release, and shall immediately notify the U.S. EPA's Project Coordinator, or, if the Project Coordinator is unavailable, U.S. EPA's Alternate Project Coordinator. If neither of these persons is available, the Performing Settling Defendants shall notify the U.S. EPA Emergency Response Unit, Region 5. Performing Settling Defendants shall take such actions in consultation with U.S. EPA's Project Coordinator or other available authorized U.S. EPA officer and in accordance with all applicable provisions of the Health and Safety Plans, the Contingency Plans, and any other applicable plans or documents developed pursuant to the SOW. In the event that Performing Settling Defendants fail to take appropriate response action as required by this Section, and U.S. EPA takes such action instead, Performing Settling Defendants shall reimburse U.S. EPA all costs of the response action not inconsistent with the NCP, pursuant to Section XVI (Reimbursement of Response Costs).

50. Nothing in the preceding Paragraph or in this Consent Decree shall be deemed to limit any authority of the United States: a) to take all appropriate action to protect human health and the environment or to prevent, abate, respond to, or minimize an actual or threatened release of Waste Material on, at, or from the Site; or, b) to direct or order such action, or seek an order from the Court, to protect human health and the environment or to prevent, abate, respond to, or minimize an actual or threatened release of Waste Material on, at, or from the Site, subject to Section XXI (Covenants Not to Sue by Plaintiff).

XVI. REIMBURSEMENT OF RESPONSE COSTS

51. Within sixty (60) days of the effective date of this Consent Decree, Settling Defendants (including both Performing and Nonperforming Settling Defendants) shall:

a. Pay to the U.S. EPA Hazardous Substance Superfund Three Million Three Hundred Thousand Dollars (\$3,300,000) in reimbursement of Past Response Costs, plus Interest on such amount from June 30, 1998 through the date of payment, by FedWire Electronic Funds Transfer ("EFT" or wire transfer) to the U.S. Department of Justice account in accordance with current electronic funds transfer procedures, referencing U.S.A.O. file number 1998V00635, the U.S. EPA Region 5 and Site/Spill ID #05-9P, and DOJ case number 90-11-3-990. Payment shall be made in accordance with instructions provided to the Settling Defendants by the Financial Litigation Unit of the United States Attorney's Office for the Western District of Michigan following lodging of the Consent Decree. Any payments received by the Department of Justice after 4:00 P.M. (Eastern Time) will be credited on the next business day. Settling Defendants shall send notice that such payment has been made to the United States as specified in Section XXVI (Notices and Submissions) and Ms. Pat Bamford, Acting Regional Financial Officer, U.S. EPA (MF-10J), 77 West Jackson Boulevard, Chicago-4, Illinois; Mr. Thomas Williams, U.S. EPA Office of Superfund (SR6J), 77 West Jackson Boulevard, Chicago-4, Illinois; and Mr. Jerome P. Kujawa, U.S. EPA Office of Regional Counsel (C-14J), 77 West Jackson Boulevard, Chicago-4, Illinois.

52. Performing Settling Defendants shall reimburse the U.S. EPA Hazardous Substance Superfund for all Future Response Costs not inconsistent with the National Contingency Plan which are paid or incurred by U.S. EPA after the Effective Date of this Consent Decree. The United States will send Performing Settling Defendants a bill requiring payment that includes an Itemized Cost Summary, including direct and indirect costs incurred by U.S. EPA and its contractors, on an annual basis. Performing Settling Defendants shall also pay the bill presented in a U.S. DOJ-prepared itemized cost summary, if any, on an annual basis. Failure to include a claim for a Response Cost

in a bill shall not preclude the United States from submitting a bill for such Response Cost in a future year. Performing Settling Defendants shall make all payments within thirty (30) days of Performing Settling Defendants' receipt of each bill requiring payment, except as otherwise provided in Paragraph 53. The Performing Settling Defendants shall make all payments required by this Paragraph in the form of a certified or cashier's check or checks made payable to "U.S. EPA Hazardous Substance Superfund" and referencing the U.S. EPA Region and Site/Spill ID # 05-9P, the DOJ case number 90-11-3-990, and the name and address of the party making payment. The Performing Settling Defendants shall send the check to U.S. EPA, P.O. Box 70753, Chicago, Illinois 606073, and shall send copies of the check to the United States as specified in Section XXVI (Notices and Submissions) and Ms. Pat Bamford, Acting Regional Financial Officer, U.S. EPA (MF-10J).

53. Performing Settling Defendants may contest payment of any Future Response Costs under Paragraph 52 if they determine that the United States has made an accounting error or if they allege that a cost item that is included represents costs that are inconsistent with the NCP. Such objection shall be made in writing within thirty (30) days of receipt of the bill and must be sent to the United States, if the United States' accounting is being disputed, pursuant to Section XXVI (Notices and Submissions). Any such objection shall specifically identify the contested Future Response Costs and the basis for objection. In the event of an objection, the Performing Settling Defendants shall within the thirty (30) day period pay all uncontested Future Response Costs to the United States in the manner described in Paragraph 51. Simultaneously, the Performing Settling Defendants shall establish an interest-bearing escrow account in a federally-insured bank duly chartered in the State of Michigan and remit to that escrow account funds equivalent to the amount

of the contested Future Response Costs. The Performing Settling Defendants shall send to the United States, as provided in Section XXVI (Notices and Submissions), a copy of the transmittal letter and check paying the uncontested Future Response Costs, and a copy of the correspondence that establishes and funds the escrow account, including, but not limited to, information containing the identity of the bank and bank account under which the escrow account is established as well as a bank statement showing the initial balance of the escrow account. Simultaneously with establishment of the escrow account, the Performing Settling Defendants shall initiate the Dispute Resolution procedures in Section XIX (Dispute Resolution). If the United States prevails in the dispute, within five (5) days of the resolution of the dispute, the Performing Settling Defendants shall pay the sums due (with accrued interest) to the United States in the manner described in Paragraph 53. If the Performing Settling Defendants prevail concerning any aspect of the contested costs, the Performing Settling Defendants shall pay that portion of the costs (plus associated accrued interest) for which they did not prevail to the United States in the manner described in Paragraph 53 ; Performing Settling Defendants shall be disbursed any balance of the escrow account. The dispute resolution procedures set forth in this Paragraph in conjunction with the procedures set forth in Section XIX (Dispute Resolution) shall be the exclusive mechanisms for resolving disputes regarding the Performing Settling Defendants' obligation to reimburse the United States for its Future Response Costs.

54. In the event that the payments required by Paragraph 51 are not made within thirty (30) days of the effective date of this Consent Decree Settling Defendants shall pay Interest on the unpaid balance. In the event that the payments required by Paragraph 52 are not made within thirty (30) days of the Performing Settling Defendants' receipt of the bill, Performing Settling Defendants

shall pay Interest on the unpaid balance. The Interest on payments required by Paragraph 51 that are not paid in a timely manner shall begin to accrue thirty (30) days after the effective date of this Consent Decree. The Interest on Future Response Costs shall begin to accrue on the date of the bill. The Interest shall accrue through the date of the Settling Defendants', or as applicable Performing Settling Defendants', payment. Payments of Interest made under this Paragraph shall be in addition to such other remedies or sanctions available to Plaintiff by virtue of Settling Defendants', or as applicable Performing Settling Defendants', failure to make timely payments under this Section. The Settling Defendants. or as applicable Performing Settling Defendants', shall make all payments required by this Paragraph in the manner described in Paragraph 52.

XVII. INDEMNIFICATION AND INSURANCE

55. The United States does not assume any liability by entering into this agreement or by virtue of any designation of Settling Defendants as U.S. EPA's authorized representatives under Section 104(e) of CERCLA. Settling Defendants shall indemnify, save and hold harmless the United States and its officials, agents, employees, contractors, subcontractors, or representatives for or from any and all claims or causes of action arising from, or on account of, negligent or other wrongful acts or omissions of Settling Defendants, their officers, directors, employees, agents, contractors, subcontractors, and any persons acting on their behalf or under their control, in carrying out activities pursuant to this Consent Decree, including, but not limited to, any claims arising from any designation of Settling Defendants as U.S. EPA's authorized representatives under Section 104(e) of CERCLA. Further, the Settling Defendants agree to pay the United States all costs it incurs including, but not limited to, attorneys fees and other expenses of litigation and settlement arising

from, or on account of, claims made against the United States based on negligent or other wrongful acts or omissions of Settling Defendants, their officers, directors, employees, agents, contractors, subcontractors, and any persons acting on their behalf or under their control, in carrying out activities pursuant to this Consent Decree. The United States shall not be held out as a party to any contract entered into by or on behalf of Settling Defendants in carrying out activities pursuant to this Consent Decree. Neither the Settling Defendants nor any such contractor shall be considered an agent of the United States. The United States shall give Settling Defendants notice of any claim for which the United States plans to seek indemnification pursuant to Paragraph 55, and shall consult with Settling Defendants prior to settling such claim.

56. Settling Defendants waive all claims against the United States for damages or reimbursement or for set-off of any payments made or to be made to the United States, arising from or on account of any contract, agreement, or arrangement between any one or more of Settling Defendants and any person for performance of Work on or relating to the Site, including, but not limited to, claims on account of construction delays. In addition, Settling Defendants shall indemnify and hold harmless the United States with respect to any and all claims for damages or reimbursement arising from or on account of any contract, agreement, or arrangement between any one or more of Settling Defendants and any person for performance of Work on or relating to the Site, including, but not limited to, claims on account of construction delays.

57. No later than fifteen (15) days before commencing any onsite Work, Performing Settling Defendants shall secure, and shall maintain until the first anniversary of U.S. EPA's Certification of Completion of the Remedial Action pursuant to Paragraph 47.b. of Section XIV (Certification of Completion) comprehensive general liability insurance with limits of five million

dollars, combined single limit, and automobile liability insurance with limits of two million dollars, combined single limit, naming the United States as additional insureds. In addition, for the duration of this Consent Decree, Performing Settling Defendants shall satisfy, or shall ensure that their contractors or subcontractors satisfy, all applicable laws and regulations regarding the provision of worker's compensation insurance for all persons performing the Work on behalf of Performing Settling Defendants in furtherance of this Consent Decree. Prior to commencement of the Work under this Consent Decree, Performing Settling Defendants shall provide to U.S. EPA certificates of such insurance and a copy of each insurance policy. Performing Settling Defendants shall resubmit such certificates and copies of policies each year on the anniversary of the effective date of this Consent Decree. If Performing Settling Defendants demonstrate by evidence satisfactory to U.S. EPA that any contractor or subcontractor maintains insurance equivalent to that described above, or insurance covering the same risks but in a lesser amount, then, with respect to that contractor or subcontractor, Performing Settling Defendants need provide only that portion of the insurance described above which is not maintained by the contractor or subcontractor.

XVIII. FORCE MAJEURE

58. "Force majeure," for purposes of this Consent Decree, is defined as any event arising from causes beyond the control of the Performing Settling Defendants, of any entity controlled by Performing Settling Defendants, or of Performing Settling Defendants' contractors, that delays or prevents the performance of any obligation under this Consent Decree despite Performing Settling Defendants' best efforts to fulfill the obligation. The requirement that the Performing Settling Defendants exercise "best efforts to fulfill the obligation" includes using best efforts to anticipate any potential force majeure event and best efforts to address the effects of any potential force

majeure event (1) as it is occurring and (2) following the potential force majeure event, such that the delay is minimized to the greatest extent possible. "Force Majeure" does not include financial inability to complete the Work or a failure to attain the Performance Standards.

59. If any event occurs or has occurred that may delay the performance of any obligation under this Consent Decree, whether or not caused by a force majeure event, the Performing Settling Defendants shall notify orally U.S. EPA's Project Coordinator or, in his or her absence, U.S. EPA's Alternate Project Coordinator or, in the event both of U.S. EPA's designated representatives are unavailable, the Director of the Office of Superfund, U.S. EPA Region 5, within twenty-four (24) hours of when Performing Settling Defendants first knew that the event might cause a delay. Within three (3) days thereafter, Performing Settling Defendants shall provide in writing to U.S. EPA an explanation and description of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay; the Performing Settling Defendants' rationale for attributing such delay to a force majeure event if they intend to assert such a claim; and a statement as to whether, in the opinion of the Performing Settling Defendants, such event may cause or contribute to an endangerment to public health, welfare or the environment. The Performing Settling Defendants shall include with any notice all available documentation supporting their claim that the delay was attributable to a force majeure. Failure to comply with the above requirements shall preclude Performing Settling Defendants from asserting any claim of force majeure for that event for the period of time of such failure to comply, and for any additional delay caused by such failure. Performing Settling Defendants shall be deemed to know

of any circumstance of which Performing Settling Defendants, any entity controlled by Performing Settling Defendants, or Performing Settling Defendants' contractors knew or should have known.

60. If U.S. EPA agrees that the delay or anticipated delay is attributable to a force majeure event, the time for performance of the obligations under this Consent Decree that are affected by the force majeure event will be extended by U.S. EPA for such time as is necessary to complete those obligations. An extension of the time for performance of the obligations affected by the force majeure event shall not, of itself, extend the time for performance of any other obligation. If U.S. EPA does not agree that the delay or anticipated delay has been or will be caused by a force majeure event, U.S. EPA will notify the Performing Settling Defendants in writing of its decision. If U.S. EPA agrees that the delay is attributable to a force majeure event, U.S. EPA will notify the Performing Settling Defendants in writing of the length of the extension, if any, for performance of the obligations affected by the force majeure event.

61. If the Performing Settling Defendants elect to invoke the dispute resolution procedures set forth in Section XIX (Dispute Resolution), they shall do so no later than fifteen (15) days after receipt of U.S. EPA's notice. In any such proceeding, Performing Settling Defendants shall have the burden of demonstrating by a preponderance of the evidence that the delay or anticipated delay has been or will be caused by a force majeure event, that the duration of the delay or the extension sought was or will be warranted under the circumstances, that best efforts were exercised to avoid and mitigate the effects of the delay, and that Performing Settling Defendants complied with the requirements of Paragraphs 58 and 59, above. If Performing Settling Defendants carry this burden, the delay at issue shall be deemed not to be a violation by Performing Settling Defendants of the affected obligation of this Consent Decree identified to U.S. EPA and the Court.

XIX. DISPUTE RESOLUTION

62. Unless otherwise expressly provided for in this Consent Decree, the dispute resolution procedures of this Section shall be the exclusive mechanism to resolve disputes arising under or with respect to this Consent Decree. However, the procedures set forth in this Section shall not apply to actions by the United States to enforce obligations of the Settling Defendants that have not been disputed in accordance with this Section.

63. Any dispute which arises under or with respect to this Consent Decree shall in the first instance be the subject of informal negotiations between the parties to the dispute. The period for informal negotiations shall not exceed twenty (20) days from the time the dispute arises, unless it is modified by written agreement of the parties to the dispute. The dispute shall be considered to have arisen when one party sends the other parties a written Notice of Dispute.

64. In the event that the parties cannot resolve a dispute by informal negotiations under the preceding Paragraph, then the position advanced by U.S. EPA shall be considered binding unless, within seven (7) days after the conclusion of the informal negotiation period, Settling Defendants invoke the formal dispute resolution procedures of this Section by serving on the United States a written Statement of Position on the matter. in dispute, including, but not limited to, any factual data, analysis or opinion supporting that position and any supporting documentation relied upon by the Settling Defendants. The Statement of Position shall specify the Settling Defendants' position as to whether formal dispute resolution should proceed under Paragraph 67 or Paragraph 68.

65. Within forty-five (45) days after receipt of Settling Defendants' Statement of Position, U.S. EPA will serve on Settling Defendants its Statement of Position, including, but not limited to, any factual data, analysis, or opinion supporting that position and all supporting documentation

relied upon by U.S. EPA. U.S. EPA's Statement of Position shall include a statement as to whether formal dispute resolution should proceed under Paragraph 67 or 68. Within fourteen (14) days after receipt of U.S. EPA's Statement of Position, Settling Defendants may submit a Reply.

66. If there is disagreement between U.S. EPA and the Settling Defendants as to whether dispute resolution should proceed under Paragraph 67 or 68, the parties to the dispute shall follow the procedures set forth in the paragraph determined by U.S. EPA to be applicable. However, if the Settling Defendants ultimately appeal to the Court to resolve the dispute, the Court shall determine which paragraph is applicable in accordance with the standards of applicability set forth in Paragraphs 67 or 68.

67. Formal dispute resolution for disputes pertaining to the selection or adequacy of any response action and all other disputes that are accorded review on the administrative record under applicable principles of administrative law shall be conducted pursuant to the procedures set forth in this Paragraph. For purposes of this Paragraph, the adequacy of any response action includes, without limitation: (1) the adequacy or appropriateness of plans, procedures to implement plans, or any other items requiring approval by U.S. EPA under this Consent Decree; and (2) the adequacy of the performance of response actions taken pursuant to this Consent Decree. Nothing in this Consent Decree shall be construed to allow any dispute by Settling Defendants regarding the validity of the-ROD's provisions.

a. An administrative record of the dispute shall be maintained by U.S. EPA and shall contain all statements of position, including supporting documentation, submitted pursuant to this Section. Where appropriate, U.S. EPA may allow submission of supplemental statements of position by the parties to the dispute.

b. The Director of the Office of Superfund, U.S. EPA Region 5, will issue a final administrative decision resolving the dispute based on the administrative record described in Paragraph . 67.a. This decision shall be binding upon the Settling Defendants, subject only to the right to seek judicial review pursuant to Paragraph 67.c. and d.

c. Any administrative decision made by U.S. EPA pursuant to Paragraph .67.b. shall be reviewable by this Court, provided that a motion for judicial review of the decision is filed by the Settling Defendants with the Court and served on all Parties within ten (10) days of receipt of U.S. EPA's decision. The motion shall include a description of the matter in dispute, the efforts made by the parties to resolve it, the relief requested, and the schedule, if any, within which the dispute must be resolved to ensure orderly implementation of this Consent Decree. The United States may file a response to Settling Defendants' motion.

d. In proceedings on any dispute governed by this Paragraph, Settling Defendants shall have the burden of demonstrating that the decision of the Office of Superfund Director is arbitrary and capricious or otherwise not in accordance with law. Judicial review of U.S. EPA's decision shall be on the administrative record compiled pursuant to Paragraph 67.a.

68. Formal dispute resolution for disputes that neither pertain to the selection or adequacy of any response action nor are otherwise accorded review on the administrative record under applicable principles of administrative law, shall be governed by this Paragraph.

69. Following receipt of Settling Defendants' Statement of Position submitted pursuant to Paragraph 64 , the Director of the Office of Superfund, U.S. EPA Region 5, will issue a final decision resolving the dispute. The Superfund Division Director's decision shall be binding on the Settling Defendants unless, within 10 days of receipt of the decision, the Settling Defendants file

with the Court and serve on the parties a motion for judicial review of the decision setting forth the matter in dispute, the efforts made by the parties to resolve it, the relief requested, and the schedule, if any, within which the dispute must be resolved to ensure orderly implementation of the Consent Decree. The United States may file a response to Settling Defendants' motion.

70. Notwithstanding Paragraph M of Section I (Background) of this Consent Decree, judicial review of any dispute governed by this Paragraph shall be governed by applicable principles of law.

71. The invocation of formal dispute resolution procedures under this Section shall not extend, postpone or affect in any way any obligation of the Settling Defendants under this Consent Decree, not directly in dispute, unless U.S. EPA or the Court agrees otherwise. Stipulated penalties with respect to the disputed matter shall continue to accrue but payment shall be stayed pending resolution of the dispute as provided in Paragraph 76. Notwithstanding the stay of payment, stipulated penalties shall accrue from the first day of noncompliance with any applicable provision of this Consent Decree. In the event that the Settling Defendants do not prevail on the disputed issue, stipulated penalties shall be assessed and paid as provided in Section XX (Stipulated Penalties).

XX. STIPULATED PENALTIES

72. Settling Defendants shall be liable for stipulated penalties in the amounts set forth in Paragraphs 73 and 74 to the United States for failure to comply with the requirements of this Consent Decree specified below, unless excused under Section XVIII (Force Majeure). "Compliance" by Settling Defendants shall include completion of the activities under this Consent Decree or any work plan or other plan approved under this Consent Decree identified below in accordance with all applicable requirements of law, this Consent Decree, the SOW, and any plans

or other documents approved by U.S. EPA pursuant to this Consent Decree and within the specified time schedules established by and approved under this Consent Decree.

73. a. The following stipulated penalties shall accrue per violation per day for any noncompliance identified in subparagraph b.

<u>Penalty Per Violation Per Day</u>	<u>Period of Noncompliance</u>
\$1,000 per day	Days 1 through 14
\$3,000 per day	Days 15 through 30
\$5,000 per day	Over 30 days

b. Failure to timely and adequately submit the following plans or reports:

1. Remedial Action Work Plan
2. APC Demonstration Report pursuant to Section III.C.3 of the SOW
3. Post Shutdown Groundwater Monitoring Plan pursuant to Section III.B.1. or III.C.3. of the SOW
4. Addendum to Remedial Action Work Plan pursuant to Section III.D. of the SOW
5. Addendum to Remedial Action Work Plan pursuant to Section III.C.5(a) of the SOW
6. Work Plan for additional Response Actions pursuant to Section III.E.2 of the SOW
7. Other modification to SOW or related work plans pursuant to Paragraph 12 of the Consent Decree

74. a. The following stipulated penalties shall accrue per violation per day for failure to submit timely or adequate additional reports or other written documents or for any other violation of this Consent Decree not otherwise included in paragraph 73 above, including but not limited to noncompliance with the Work requirements set forth in subparagraph b, below:

<u>Penalty Per Violation Per Day</u>	<u>Period of Noncompliance</u>
\$1000 per day	Days 1 through 14
\$2000 per day	Over 15 days

b. Noncompliance with Work requirements:

1. Failure to file restrictive covenants pursuant to the approved RA Work Plan
2. Failure to operate, maintain, upgrade or monitor the effectiveness of the groundwater extraction and treatment system in accordance with the approved RA Work Plan or Addendum thereto.
3. Failure to implement requirements for Post Shutdown groundwater monitoring In the approved APC Demonstration Plan or Post Shutdown Monitoring Plan.
4. Failure to timely restart the groundwater extraction and treatment system pursuant to the approved RA Work Plan or addendum thereto, or Section III.E.5 of this SOW.
5. Failure to implement additional response actions in accordance with any modification to the SOW or related work plans approved by EPA pursuant to Paragraph 12 of the Consent Decree or Section III.E.2 of this SOW.
6. Failure to orally report a release pursuant to Paragraph 30, or submit a written report of a release pursuant to Paragraph 31 of the Consent Decree.
7. Failure to establish financial assurance pursuant to paragraph 43 of the Consent Decree.
8. Failure to secure comprehensive liability insurance pursuant to Paragraph 57 of the Consent Decree.
9. Failure to retain and/or preserve records pursuant to Paragraph 103 of the Consent Decree.

75. In the event that U.S. EPA assumes performance of a portion or all of the Work pursuant to Paragraph 80 of Section XXI (Covenants Not to Sue by Plaintiffs), Performing Settling Defendants shall be liable for a stipulated penalty in the amount of One Hundred Thousand dollars (\$100,000).

76. All penalties shall begin to accrue on the day after the complete performance is due or the day a violation occurs, and shall continue to accrue through the final day of the correction of the noncompliance or completion of the activity. However, stipulated penalties shall not accrue: (1) with respect to a deficient submission under Section XI (U.S. EPA Approval of Plans and Other Submissions), during the period, if any, beginning on the 31st day after U.S. EPA's receipt of such submission until the date that U.S. EPA notifies Settling Defendants of any deficiency; (2) with

respect to a decision by the Director of the Office of Superfund, U.S. EPA Region 5, under Section XIX (Dispute Resolution), during the period, if any, beginning on the 21st day after the date that Settling Defendants' reply to U.S. EPA's Statement of Position is received until the date that the Director issues a final decision regarding such dispute; or (3) with respect to judicial review by this Court of any dispute under Section XIX (Dispute Resolution), during the period, if any, beginning on the 31st day after the Court's receipt of the final submission regarding the dispute until the date that the Court issues a final decision regarding such dispute. Nothing herein shall prevent the simultaneous accrual of separate penalties for separate violations of this Consent Decree.

77. Following U.S. EPA's determination that Settling Defendants have failed to comply with a requirement of this Consent Decree, U.S. EPA may give Settling Defendants written notification of the same and describe the noncompliance. U.S. EPA may send the Settling Defendants a written demand for the payment of the penalties. However, penalties shall accrue as provided in the preceding Paragraph regardless of whether U.S. EPA has notified the Settling Defendants of a violation.

78. All penalties accruing under this Section shall be due and payable to the United States within thirty (30) days of the Settling Defendants' receipt from U.S. EPA of a demand for payment of the penalties, unless Settling Defendants invoke the Dispute Resolution procedures under Section XIX (Dispute Resolution). All payments to the United States under this Section shall be paid by certified or cashier's check(s) made payable to "U.S. EPA Hazardous Substances Superfund," shall be mailed to U.S. EPA Lockbox, P.O. Box 70753, Chicago, Illinois 60673, and shall indicate that the payment is for stipulated penalties, and shall reference the U.S. EPA Region and Site/Spill ID #05-9P, the DOJ Case Number 90-11-3-990, and the name and address of the party making payment.

Copies of checks paid pursuant to this Section, and any accompanying transmittal letter(s), shall be sent to the United States as provided in Section XXVI (Notices and Submissions), and to Ms. Pat Bamford, U.S. EPA Regional Financial Officer, U.S. EPA (MF-10J).

79. The payment of penalties shall not alter in any way Settling Defendants' obligation to complete the performance of the Work required under this Consent Decree.

80. Penalties shall continue to accrue as provided in Paragraph 76 during any dispute resolution period, but need not be paid until the following:

a. If the dispute is resolved by agreement or by a decision of U.S. EPA that is not appealed to this Court, accrued penalties determined to be owing shall be paid to U.S. EPA within fifteen (15) days of the agreement or the receipt of U.S. EPA's decision or order;

b. If the dispute is appealed to this Court and the United States prevails in whole or in part, Settling Defendants shall pay all accrued penalties determined by the Court to be owed to U.S. EPA within sixty (60) days of receipt of the Court's decision or order, except as provided in Subparagraph c below;

c. If the District Court's decision is appealed by any Party, Settling Defendants shall pay all accrued penalties determined by the District Court to be owing to the United States into an interest-bearing escrow account within sixty (60) days of receipt of the Court's decision or order. Penalties shall be paid into this account as they continue to accrue, at least every sixty (60) days. Within fifteen (15) days of receipt of the final appellate court decision, the escrow agent shall pay the balance of the account to U.S. EPA or to Settling Defendants to the extent that they prevail.

81. If Settling Defendants fail to pay stipulated penalties when due, the United States may institute proceedings to collect the penalties, as well as interest. Settling Defendants shall pay Interest

on the unpaid balance, which shall begin to accrue on the date of demand made pursuant to Paragraph .78.

82. Nothing in this Consent Decree shall be construed as prohibiting, altering, or in any way limiting the ability of the United States to seek any other remedies or sanctions available by virtue of Settling Defendants' violation of this Decree or of the statutes and regulations upon which it is based, including, but not limited to, penalties pursuant to Section 122(l) of CERCLA, 42 U.S.C. Section 9622(l). Provided, however, that the United States shall not seek civil penalties pursuant to Section 122(l) of CERCLA for any violation for which a stipulated penalty is provided herein, except in the case of a willful violation of the Consent Decree.

83. Notwithstanding any other provision of this Section, the United States may, in its unreviewable discretion., waive any portion of stipulated penalties that have accrued pursuant to this Consent Decree.

XXI. COVENANTS NOT TO SUE BY PLAINTIFF

84. In consideration of the actions that will be performed and the payments that will be made by the Settling Defendants under the terms of the Consent Decree, and except as specifically provided in Paragraphs 85, 86, and 88 of this Section, the United States covenants not to sue or to take any administrative action against Settling Defendants pursuant to Sections 106 and 107(a) of CERCLA and Section 7003 of RCRA relating to the Site, including for any liability associated with the soil remedy selected in the ROD . Except with respect to future liability, these covenants not to sue shall take effect upon the receipt by U.S. EPA of the payments required by Paragraph 51 of Section XVI (Reimbursement of Response Costs). With respect to future liability, these covenants not to sue shall take effect upon Certification of Completion of Remedial Action by U.S. EPA

pursuant to Paragraph 47.b. of Section XIV (Certification of Completion). These covenants not to sue are conditioned upon the satisfactory performance by Settling Defendants of their obligations under this Consent Decree. These covenants not to sue extend only to the Settling Defendants and do not extend to any other person. As to all Settling Defendants, upon its entry, this Consent Decree replaces and supersedes the requirements of the unilateral order under CERCLA Section 106(a), 42 U.S.C. § 9606(a), issued on January 6, 1992 requiring implementation of the first operable unit ROD.

85. United States' Pre-certification Reservations. Notwithstanding any other provision of this Consent Decree, the United States reserves, and this Consent Decree is without prejudice to, the right to institute proceedings in this action or in a new action, or to issue an administrative order seeking to compel Settling Defendants (a) to perform further response actions relating to the Site; or (b) to reimburse the United States for additional costs of response if, prior to Certification of Completion of the Remedial Action:

- (1) conditions at the Site, previously unknown to U.S. EPA, are discovered, or
- (2) information, previously unknown to U.S. EPA, is received, in whole or in part, and these previously unknown conditions or information together with any other relevant information indicates that the Remedial Action is not protective of human health or the environment.

86. United States' Post-certification Reservations. Notwithstanding any other provision of this Consent Decree, the United States reserves, and this Consent Decree is without prejudice to, the right to institute proceedings in this action or in a new action, or to issue an administrative order seeking to compel Settling Defendants (a) to perform further response actions relating to the Site or

(b) to reimburse the United States for additional costs of response if, subsequent to Certification of Completion of the Remedial Action:

- (1) conditions at the Site, previously unknown to U.S. EPA, are discovered, or
- (2) information, previously unknown to U.S. EPA, is received, in whole or in part, and these previously unknown conditions or this information together with other relevant information indicate that the Remedial Action is not protective of human health or the environment.

87. For purposes of Paragraph 85, the information and the conditions known to U.S. EPA shall include only that information and those conditions known to U.S. EPA as of the date the ROD was signed and set forth in the Record of Decision for the Site and the administrative record supporting the Record of Decision. For purposes of Paragraph 86, the information and the conditions known to U.S. EPA shall include only that information and those conditions known to U.S. EPA as of the date of Certification of Completion of the Remedial Action and set forth in the Final Remedy (February 5, 1997) Record of Decision, the administrative record supporting the Record of Decision, the post-ROD administrative record, or in any information received by U.S. EPA pursuant to the requirements of this Consent Decree prior to Certification of Completion of the Remedial Action.

88. General reservations of rights. The covenants not to sue set forth above do not pertain to any matters other than those expressly specified in Paragraph 84. The United States reserves, and this Consent Decree is without prejudice to, all rights against Settling Defendants with respect to all other matters, including but not limited to, the following:

- (1) claims based on a failure by Settling Defendants to meet a requirement of this Consent Decree;

(2) liability arising from the past, present, or future disposal, release, or threat of release of Waste Materials outside of the Site;

(3) liability for future disposal of Waste Material at the Site, other than as provided in the ROD, the Work, or otherwise ordered by U.S. EPA;

(4) liability for damages for injury to, destruction of, or loss of natural resources, and for the costs of any natural resource damage assessments;

(5) criminal liability;

(6) liability for violations of federal or state law which occur during or after implementation of the Remedial Action; and

(7) liability, prior to Certification of Completion of the Remedial Action, for additional response actions, except in connection with the soil remedy selected in the ROD, that U.S. EPA determines are necessary to achieve Performance Standards, but cannot be required pursuant to Paragraph 12 (Modification of the SOW or Related Work Plans).

89. Work Takeover. In the event U.S. EPA determines that Performing Settling Defendants have ceased implementation of any portion of the Work, are seriously or repeatedly deficient or late in their performance of the Work, or are implementing the Work in a manner which may cause an endangerment to human health or the environment, U.S. EPA may assume the performance of all or any portions of the Work as U.S. EPA determines necessary. Performing Settling Defendants may invoke the procedures set forth in Section XIX (Dispute Resolution), Paragraph 67, to dispute U.S. EPA's determination that takeover of the Work is warranted under this Paragraph. Costs incurred by the United States in performing the Work pursuant to this Paragraph

shall be considered Future Response Costs that Performing Settling Defendants shall pay pursuant to Section XVI (Reimbursement of Response Costs).

90. Notwithstanding any other provision of this Consent Decree (with the exception of paragraph 84), the United States retains all authority and reserves all rights to take any and all response actions authorized by law.

XXII. COVENANTS BY SETTLING DEFENDANTS

91. Covenant Not to Sue. Subject to the reservations in Paragraph 92, Settling Defendants hereby covenant not to sue and agree not to assert any claims or causes of action against the United States with respect to the Site, and Past and Future Response Costs as defined herein or this Consent Decree, including, but not limited to:

a. any direct or indirect claim for reimbursement from the Hazardous Substance Superfund (established pursuant to the Internal Revenue Code, 26 U.S.C. § 9507) through CERCLA Sections 106(b)(2), 107, 111, 112, 113 or any other provision of law;

b. any claims against the United States, including any department, agency or instrumentality of the United States under CERCLA Sections 107 or 113 related to the Site, or

c. any claims arising out of response activities at the Site, including claims based on U.S. EPA's selection of response actions, oversight of response activities or approval of plans for such activities.

92. The Settling Defendants reserve, and this Consent Decree is without prejudice to, claims against the United States, subject to the provisions of Chapter 171 of Title 28 of the United States Code, for money damages for injury or loss of property or personal injury or death caused by the negligent or wrongful act or omission of any employee of the United States while acting within

the scope of his office or employment under circumstances where the United States, if a private person, would be liable to the claimant in accordance with the law of the place where the act or omission occurred. However, any such claim shall not include a claim for any damages caused, in whole or in part, by the act or omission of any person, including any contractor, who is not a federal employee as that term is defined in 28 U.S.C. § 2671; nor shall any such claim include a claim based on U.S. EPA's selection of response actions, or the oversight or approval of the Settling Defendants' plans or activities. The foregoing applies only to claims which are brought pursuant to any statute other than CERCLA and for which the waiver of sovereign immunity is found in a statute other than CERCLA.

93. Nothing in this Consent Decree shall be deemed to constitute preauthorization of a claim within the meaning of Section 111 of CERCLA, 42 U.S.C. § 9611, or 40 C.F.R. § 300.700(d).

94. a. Settling Defendants agree not to assert any claims and to waive all claims or causes of action that they may have for all matters relating to the Site, including for contribution, against any person where the person's liability to Settling Defendants with respect to the Site is based solely on having arranged for disposal or treatment, or for transport for disposal or treatment, of hazardous substances at the Site, or having accepted for transport for disposal or treatment of hazardous substances at the Site, if the materials contributed by such person to the Site containing hazardous substances did not exceed the greater of (i) 0.002% of the total volume of waste at the Site, or (ii) 110 gallons of liquid materials or 200 pounds of solid materials. This waiver shall not apply to any claim or cause of action against any person meeting the above criteria if EPA has determined that the materials contributed to the Site by such person contributed or could contribute significantly to the costs of response at the Site. This waiver also shall not apply with respect to any defense, claim,

or cause of action that a Settling Defendant may have against any person if such person asserts a claim or cause of action relating to the Site against such Settling Defendant.

b. Settling Defendants agree that all claims and causes of action that they may have against Total Petroleum Company and its predecessors and successors in interest, including Ultramar Diamond Shamrock, (collectively "Total Petroleum Company") for all matters relating to the Site shall be subject and subordinate in all respects to the claims and causes of action of Plaintiff against Total Petroleum Company. Such subordination shall be effectuated in a manner acceptable to Plaintiff. The foregoing provision shall not in anyway be deemed to restrict the rights of the United States set forth in CERCLA Section 113(f)(3)(C).

XXIII. EFFECT OF SETTLEMENT; CONTRIBUTION PROTECTION

95. Nothing in this Consent Decree shall be construed to create any rights in, or grant any cause of action to, any person not a Party to this Consent Decree. The preceding sentence shall not be construed to waive or nullify any rights that any person not a signatory to this decree may have under applicable law. Each of the Parties expressly reserves any and all rights including, but not limited to, any right to contribution, defenses, claims, demands, and causes of, action which each Party may have with respect to any matter, transaction, or occurrence relating in any way to the Site against any person not a Party hereto. In the event that Essex Group, Koch Chemical, Konica Imaging, or Tag Chemicals, or their respective successors-in-interest do not participate in this Consent Decree, the United States agrees that so long as Settling Defendants are complying with this Consent Decree, the United States will not enter into a separate agreement with Essex Group, Koch Chemical, Konica Imaging, or Tag Chemicals, or their respective successors-in-interest that would provide that they have contribution protection pursuant to 42 U.S.C. § 9613(f)(2) against any claim

by Settling Defendants for the costs of performing the Work or meeting other requirements under this Decree.

96. The Parties agree, and by entering this Consent Decree this Court finds, that the Settling Defendants are entitled, as of the effective date of this Consent Decree, to protection from contribution actions or claims as provided by CERCLA Section 113(f)(2), 42 U.S.C. § 9613(f)(2) for matters addressed in this Consent Decree. The "matters addressed" are all response actions taken or to be taken and all response costs and interest thereon, incurred or to be incurred by the United States or any other person with respect to the Site. The "matters addressed" do not include those response costs or response actions as to which the United States has reserved its rights against Settling Defendants under this Consent Decree (except for claims for failure to comply with this Decree), in the event that the United States asserts rights against Settling Defendants coming within the scope of such reservations.

97. The Settling Defendants agree that with respect to any suit or claim for contribution brought by them for matters related to this Consent Decree after the Effective Date of this Consent Decree, they will notify the United States in writing no later than sixty (60) days prior to the initiation of such suit or claim.

98. The Settling Defendants also agree that with respect to any suit or claim for contribution brought against them for matters related to this Consent Decree after the Effective Date of this Consent Decree, they will notify in writing the United States within ten (10) days of service of the complaint on them. In addition, Settling Defendants shall notify the United States within ten (10) days of service or receipt of any Motion for Summary Judgment and within ten (10) days of receipt of any order from a court setting a case for trial.

99. In any subsequent administrative or judicial proceeding initiated by the United States for injunctive relief, recovery of response costs, or other appropriate relief relating to the Site, Settling Defendants shall not assert, and may not maintain, any defense or claim based upon the principles of waiver, res judicata, collateral estoppel, issue preclusion, claim-splitting, or other defenses based upon any contention that the claims raised by the United States in the subsequent proceeding were or should have been brought in the instant case; provided, however, that nothing in this Paragraph affects the enforceability of the covenants not to sue set forth in Section XXI (Covenants Not to Sue by Plaintiff).

XXIV. ACCESS TO INFORMATION

100. Settling Defendants shall provide to U.S. EPA, upon request, copies of all documents and information within their possession or control or that of their contractors or agents relating to activities at the Site or to the implementation of this Consent Decree, including, but not limited to, sampling, analysis, chain of custody records, manifests, trucking logs, receipts, reports, sample traffic routing, correspondence, or other documents or information related to the Work. Settling Defendants shall also make available to U.S. EPA, for purposes of investigation, information gathering, or testimony, their employees, agents, or representatives with knowledge of relevant facts concerning the performance of the Work.

101. a. Settling Defendants may assert business confidentiality claims covering part or all of the documents or information submitted to Plaintiff under this Consent Decree to the extent permitted by and in accordance with Section 104(e)(7) of CERCLA, 42 U.S.C. § 9604(e)(7), and 40 C.F.R. § 2.203(b). Documents or information determined to be confidential by U.S. EPA will be afforded the protection specified in 40 C.F.R. Part 2, Subpart B. If no claim of confidentiality

accompanies documents or information when they are submitted to U.S. EPA, or if U.S. EPA has notified Settling Defendants that the documents or information are not confidential under the standards of Section 106(e)(7) of CERCLA, the public may be given access to such documents or information without further notice to Settling Defendants.

b. The Settling Defendants may assert that certain documents, records and other information are privileged under the attorney-client privilege or any other privilege recognized by federal law. If the Settling Defendants assert such a privilege in lieu of providing documents, they shall provide the Plaintiff with the following: (1) the title of the document, record, or information; (2) the date of the document, record, or information; (3) the name and title of the author of the document, record, or information; (4) the name and title of each addressee and recipient; (5) a description of the contents of the document, record, or information; and (6) the privilege asserted by Settling Defendants. However, no documents, reports or other information created or generated pursuant to the requirements of the Consent Decree shall be withheld on the grounds that they are privileged.

102. No claim of confidentiality shall be made with respect to any data, including, but not limited to, all sampling, analytical, monitoring, hydrogeologic, scientific, chemical, or engineering data evidencing conditions at or around the Site.

XXV. RETENTION OF RECORDS

103. Until seven (7) years after the Settling Defendants' receipt of U.S. EPA's notification pursuant to Paragraph 48.b of Section XIV (Certification of Completion of the Work), each Settling Defendant shall preserve and retain all records and documents now in its possession or control or which come into its possession or control that relate in any manner to the performance of the Work

or liability of any person for response actions conducted and to be conducted at the Site, regardless of any corporate retention policy to the contrary. Until seven (7) years after the Settling Defendants' receipt of U.S. EPA's notification pursuant to Paragraph 47.b of Section XIV (Certification of Completion), Settling Defendants shall also instruct their contractors and agents to preserve all documents, records, and information of whatever kind, nature or description relating to the performance of the Work.

104. At the conclusion of this document retention period, Settling Defendants shall notify the United States at least ninety (90) days prior to the destruction of any such records or documents, and, upon request by the United States, Settling Defendants shall deliver any such records or documents to U.S. EPA. The Settling Defendants may assert that certain documents, records and other information are privileged under the attorney-client privilege or any other privilege recognized by federal law. If the Settling Defendants assert such a privilege, they shall provide the Plaintiff with the following: (1) the title of the document, record, or information; (2) the date of the document, record, or information; (3) the name and title of the author of the document, record, or information; (4) the name and title of each addressee and recipient; (5) a description of the subject of the document, record, or information; and (6) the privilege asserted by Settling Defendants. However, no documents, reports or other information created or generated pursuant to the requirements of the Consent Decree shall be withheld on the grounds that they are privileged.

105. Each Settling Defendant hereby certifies individually that, to the best of its knowledge and belief, after thorough inquiry, it has not altered, mutilated, discarded, destroyed or otherwise disposed of any records, documents or other information relating to its potential liability regarding the Site since notification of potential liability by the United States or the State or the filing

of suit against it regarding the Site and that it has fully complied with any and all U.S. EPA requests for information pursuant to Section 104(e) and 122(e) of CERCLA, 42 U.S.C. 9604(e) and 9622(e), and Section 3007 of RCRA, 42 U.S.C. 6927.

XXVI. NOTICES AND SUBMISSIONS

106. Whenever, under the terms of this Consent Decree, written notice is required to be given or a report or other document is required to be sent by one Party to another, it shall be directed to the individuals at the addresses specified below, unless those individuals or their successors give notice of a change to the other Parties in writing. All notices and submissions shall be considered effective upon receipt, unless otherwise provided. Written notice as specified herein shall constitute complete satisfaction of any written notice requirement of the Consent Decree with respect to the United States, U.S. EPA, and the Settling Defendants, respectively.

As to the United States:

Chief, Environmental Enforcement Section
Environment and Natural Resources Division
U.S. Department of Justice
P.O. Box 7611
Ben Franklin Station
Washington, D.C. 20044
Re: DJ # 90-11-3-990

As to U.S. EPA:

Thomas Williams
Project Coordinator (Organic Chemical Site)
United States Environmental Protection Agency
Region 5
77 W. Jackson Blvd.
Chicago, IL 60604

Jerome P. Kujawa, Esq.

Office of Regional Counsel
United States Environmental Protection Agency
Region 5
77 W. Jackson Blvd.
Chicago, IL 60604

As to the Settling Defendants and/or Performing Settling Defendants:

Renato Pasqualoni
Settling Defendants' Project Coordinator
Conestoga Rovers & Associates
651 Colby Drive
Waterloo, Ontario N2V102

Alan C. Schwartz
Miller, Johnson, Snell & Cummiskey, P.L.C.
Calder Plaza Building
250 Monroe Avenue N.W. Suite 800
P.O. Box 306
Grand Rapids, Michigan 49501-0306

XXVII. EFFECTIVE DATE

107. The effective date of this Consent Decree shall be the date upon which this Consent Decree is entered by the Court, except as otherwise provided herein.

XXVIII. RETENTION OF JURISDICTION

108. This Court retains jurisdiction over both the subject matter of this Consent Decree and the Settling Defendants for the duration of the performance of the terms and provisions of this Consent Decree for the purpose of enabling any of the Parties to apply to the Court at any time for such further order, direction, and relief as may be necessary or appropriate for the construction or modification of this Consent Decree, or to effectuate or enforce compliance with its terms, or to resolve disputes in accordance with Section XIX (Dispute Resolution) hereof.

XXIX. APPENDICES

109. The following appendices are attached to and incorporated into this Consent Decree:

"Appendix A" is the February 5, 1997 ROD.

"Appendix B" is the SOW.

"Appendix C" is the description and/or map of the Site.

"Appendix D" is the complete list of the Settling Defendants.

"Appendix E" is the list of Performing Settling Defendants.

"Appendix F" is the draft form restrictive covenant.

"Appendix G" is the list of Nonperforming Settling Defendants.

XXX. COMMUNITY RELATIONS

110. Settling Defendants shall propose to U.S. EPA their participation in the community relations plan to be developed by U.S. EPA. U.S. EPA will determine the appropriate role for the Settling Defendants under the Plan. Settling Defendants shall also cooperate with U.S. EPA in providing information regarding the Work to the public. As requested by U.S. EPA, Settling Defendants shall participate in the preparation of such information for dissemination to the public and in public meetings which may be held or sponsored by U.S. EPA to explain activities at or relating to the Site.

XXXI. MODIFICATION

111. Schedules specified in this Consent Decree for completion of the Work may be modified by agreement of U.S. EPA and the Settling Defendants. All such modifications shall be made in writing.

112. Except as provided in Paragraph 12 ("Modification of the SOW or related Work Plans"), no material modifications shall be made to the SOW without written notification to and written approval of the United States, Settling Defendants, and the Court. Prior to providing its approval to any modification, the United States will provide the State with a reasonable opportunity to review and comment on the proposed modification. Modifications to the SOW that do not materially alter that document may be made by written agreement between U.S. EPA, after providing the State with a reasonable opportunity to review and comment on the proposed modification, and the Settling Defendants.

113. Nothing in this Decree shall be deemed to alter the Court's power to enforce, supervise or approve modifications to this Consent Decree.

XXXII. LODGING AND OPPORTUNITY FOR PUBLIC COMMENT

114. This Consent Decree shall be lodged with the Court for a period of not less than thirty (30) days for public notice and comment in accordance with Section 122(d)(2) of CERCLA, 42 U.S.C. § 9622(d)(2), and 28 C.F.R. § 50.7. The United States reserves the right to withdraw or withhold its consent if the comments regarding the Consent Decree disclose facts or considerations which indicate that the Consent Decree is inappropriate, improper, or inadequate. Settling Defendants consent to the entry of this Consent Decree without further notice.

115. If for any reason the Court should decline to approve this Consent Decree in the form presented, this agreement is voidable at the sole discretion of any Party and the terms of the agreement may not be used as evidence in any litigation between the Parties.

XXXIII. SIGNATORIES/SERVICE

116. Each undersigned representative of a Settling Defendant to this Consent Decree and the Assistant Attorney General for Environment and Natural Resources of the Department of Justice certifies that he or she is fully authorized to enter into the terms and conditions of this Consent Decree and to execute and legally bind such Party to this document.

117. Each Settling Defendant hereby agrees not to oppose entry of this Consent Decree by this Court or to challenge any provision of this Consent Decree unless the United States has notified the Settling Defendants in writing that it no longer supports entry of the Consent Decree.

118. Each Settling Defendant shall identify, on the attached signature page, the name, address and telephone number of an agent who is authorized to accept service of process by mail on behalf of that Party with respect to all matters arising under or relating to this Consent Decree. Settling Defendants hereby agree to accept service in that manner and to waive the formal service requirements set forth in Rule 4 of the Federal Rules of Civil Procedure and any applicable local rules of this Court, including, but not limited to, service of a summons.

SO ORDERED THIS 7th DAY OF February, 19²⁰⁰⁰.

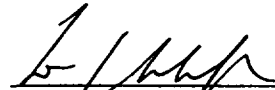
David A. Bue

United States District Judge

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. Abitibi Price Corporation, et al., relating to the Organic Chemicals, Inc. Superfund Site.

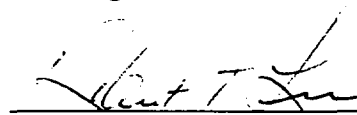
FOR THE UNITED STATES OF AMERICA

May 10, 1999
Date



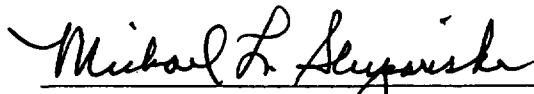
LOIS J. SCHIFFER
Assistant Attorney General
Environment and Natural Resources Division
U.S. Department of Justice
Washington, D.C. 20530

April 20, 1999
Date



ROBERT T. LEE
Trial Attorney
Environmental Enforcement Section
Environment and Natural Resources Division
U.S. Department of Justice
Washington, D.C. 20530

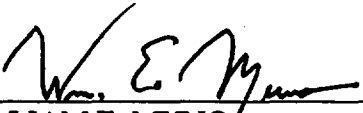
June 11, 1999
Date



MICHAEL L. SHIPARSKI
Assistant United States Attorney
United States Attorney's Office
Western District of Michigan
Post Office Box 208
Grand Rapids, Michigan 49501-0208

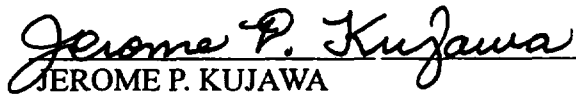
THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. Abitibi Price Corporation, et al., relating to the Organic Chemicals, Inc. Superfund Site.

5/24/99
Date



WILLIAM E. MUNO
Director, Superfund Division
U.S. Environmental Protection Agency,
Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604

May 12, 1999
Date



JEROME P. KUJAWA
Associate Regional Counsel
U.S. Environmental Protection Agency
Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. Abitibi Price Corporation, et al., relating to the Organic Chemicals, Inc. Superfund Site.

MARCH 29, 1999
Date

FOR DEFENDANT:

Fort James Operating Company
f/k/a James River Paper Company, Inc.

Name of Defendant 1650 Lake Cook Road
Post Office Box 89
Deerfield, Illinois 60015-0089

Address
847/317-5000

Telephone Number

By: CLIFFORD A. CUTCHINS IV
Name of Officer (please type or print)

[Signature]
Signature of Officer

SR. J.A.
Title

If different from above, the following is the name and address of Defendant's agent for service and, if Defendant has counsel, the name and address of Defendant's counsel. Counsel may act as agent for service.

Agent for Service

Name

Address

Attorney

CYNTHIA V. BAILEY
Name
6802 Paragon Place, Suite 400
Richmond, Virginia 23230

Address
804/662-8379

Telephone

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. Abitibi Price Corporation, et al., relating to the Organic Chemicals, Inc. Superfund Site.

FOR DEFENDANT:

March 23, 1999

Date

Name of Defendant Du-Wel Products, Inc.

Post Office Box 470

Dowagiac, Michigan 49047

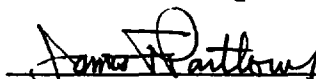
Address

616/782-2108

Telephone Number

By: James F. Partlowe

Name of Officer (please type or print)



Signature of Officer

President

Title

If different from above, the following is the name and address of Defendant's agent for service and, if Defendant has counsel, the name and address of Defendant's counsel. Counsel may act as agent for service.

Agent for Service

Charles E. Barbieri, Esq.

Foster, Swift, Collins & Smith

Name

313 South Washington Square

Lansing, Michigan 48933-2193

Address

Attorney

Charles E. Barbieri, Esq.

Foster, Swift, Collins & Smith, P.C.

Name

313 South Washington Square

Lansing, Michigan 48933-2193

Address

517/371-8155

Telephone

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. Abitibi Price Corporation, et al., relating to the Organic Chemicals, Inc. Superfund Site.

FOR DEFENDANT:

March 29, 1999
Date

The Leslie Metal Arts Company, Inc. a/k/a Lescoa Manufacturing Co.

3225 - 32nd Street, S.E.
Grand Rapids, Michigan 49509
(616) 949-1250

By: David C. Bottrall, Esq.

David C. Bottrall
Signature of Officer

General Counsel, Secretary and Vice-President
Title

If different from above, the following is the name and address of Defendant's agent for service and, if Defendant has counsel, the name and address of Defendant's counsel. Counsel may act as agent for service.

Agents for Service:

Michael F. Kelly, Esq.
Mark M. Davis, Esq.
VARNUM, RIDDERING, SCHMIDT & HOWLETT LLP
P.O. Box 352
Grand Rapids, Michigan 49501-0352

Attorneys

Michael F. Kelly, Esq.
Mark M. Davis, Esq.
VARNUM, RIDDERING, SCHMIDT & HOWLETT LLP
P.O. Box 353
Grand Rapids, Michigan 49501-0352
(616) 336-6000

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. Abitibi Price Corporation, et al., relating to the Organic Chemicals, Inc. Superfund Site.

FOR DEFENDANT:

Date

Wilson Sporting Goods Co.

Name of Defendant

8700 W. Bryn Mawr, Chicago, IL 60631-3584

Address

773/714-6400

Telephone Number

By: Raymond M. Berens

Name of Officer (please type or print)

Raymond M. Berens

Signature of Officer

General Counsel & Asst. Secretary

Title

If different from above, the following is the name and address of Defendant's agent for service and, if Defendant has counsel, the name and address of Defendant's counsel. Counsel may act as agent for service.

Agent for Service

Attorney

Name

Michael H. Elam

Name

Address

203 W. LaSalle St., Chicago, IL 60601

Address

312/368-4028

Telephone

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. Abitibi Price Corporation, et al., relating to the Organic Chemicals, Inc. Superfund Site.

3/26/99
Date

FOR DEFENDANT:

National Aluminum Corporation
d/b/a Hastings Aluminum

Name of Defendant

5910 North Central Expressway, Suite 1780
Address

(214) 365-7450
Telephone Number

By: Robert H. Stone
Name of Officer (please type or print)

Robert H. Stone
Signature of Officer

Vice President
Title

If different from above, the following is the name and address of Defendant's agent for service and, if Defendant has counsel, the name and address of Defendant's counsel. Counsel may act as agent for service.

Agent for Service

Name

Address

Attorney

James M. Ginocchi, Esquire

Name

Thorp Reed & Armstrong, LLP
One Riverfront Center, 20 Stanwix Street

Address Pittsburgh, PA 15222-4895

412-394-2433

Telephone

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. Abitibi Price Corporation, et al., relating to the Organic Chemicals, Inc. Superfund Site

3/18/99
Date

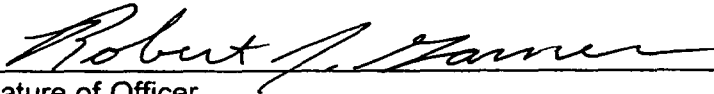
FOR DEFENDANT:

Chemcentral Corporation, an Illinois corporation, successor to Chemcentral Corporation, a Michigan corporation d/b/a Chemcentral - Grand Rapids, and successor to Chemcentral Corporation, an Ohio Corporation d/b/a Chemcentral - Toledo
Name of Defendant

P.O. Box 730
Bedford Park, IL 60499-0730
Address

708-594-7000
Telephone Number

By: Robert J. Garner
Name of Officer


Signature of Officer

Vice President Environmental Affairs
Title of Officer

If different from above, the following is the name and address of Defendant's agent for service and, if Defendant has counsel, the name and address of Defendant's counsel. Counsel may act as agent for service.

Agent for Service

Name

Address

Attorney

Name

Address

Telephone

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. Abitibi Price Corporation, et al., relating to the Organic Chemicals, Inc. Superfund Site.

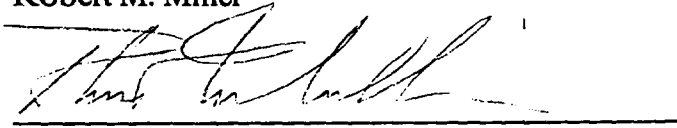
FOR DEFENDANT:

3/29/1999
Date

Keeler Brass Company

425 Post Road
Fairfield, Connecticut 06430-0970
(203) 255-7143

By: Robert M. Miller



Signature of Officer

Vice President, Legal and Secretary
Title

If different from above, the following is the name and address of Defendant's agent for service and, if Defendant has counsel, the name and address of Defendant's counsel. Counsel may act as agent for service.

Agents for Service:

Michael F. Kelly, Esq.
Mark M. Davis, Esq.
VARNUM, RIDDERING, SCHMIDT & HOWLETT LLP
P.O. Box 352
Grand Rapids, Michigan 49501-0352

Attorneys

Michael F. Kelly, Esq.
Mark M. Davis, Esq.
VARNUM, RIDDERING, SCHMIDT & HOWLETT LLP
P.O. Box 353
Grand Rapids, Michigan 49501-0352
(616) 336-6000

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. Abitibi Price Corporation, et al., relating to the Organic Chemicals, Inc. Superfund Site.

FOR DEFENDANT:

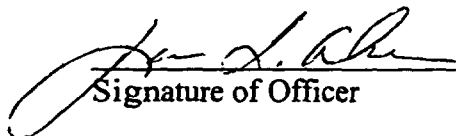
March 29, 1999
Date

E. I. du Pont de Nemours and Company
Name of Defendant

1007 Market Street, Wilmington, DE 19898
Address

302.774.1000
Telephone Number

By: James L. Aker
Name of Officer (please type or print)


Signature of Officer

Corporate Remediation Group, Project Director
Title

If different from above, the following is the name and address of Defendant's agent for service and, if Defendant has counsel, the name and address of Defendant's counsel. Counsel may act as agent for service.

Agent for Service

~~Attorney~~

Name

Barbara U. Gravely
Name

Address

DuPont Legal, D-7083, Wilmington, DE 19898
Address

302.774.4201
Telephone

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. Abitibi Price Corporation, et al., relating to the Organic Chemicals, Inc. Superfund Site.

FOR DEFENDANT:

MARCH 23, 1999

Date

LILLY INDUSTRIES, INC., SUCCESSOR TO
Name of Defendant GUARDSMAN PRODUCTS d/b/a AMERICA
ACROSSO.

733 SOUTH WEST STREET
Address INDIANAPOLIS, INDIANA 46225

(317) 687-6700
Telephone Number

By: LARRY H. DALTON

Name of Officer (please type or print)

Larry H Dalton
Signature of Officer

V. P. OPERATIONS AND MANUFACTURING
Title

If different from above, the following is the name and address of Defendant's agent for service and, if Defendant has counsel, the name and address of Defendant's counsel. Counsel may act as agent for service.

Agent for Service

SEE COUNSEL INFORMATION

Name

Address

Attorney

E. SEAN GRIGGS, Esq.

Name

BARNES & THORNBURG
11 SOUTH MERIDIAN ST.

Address

INDIANAPOLIS, INDIANA 46204
(317) 231-7793

Telephone

Telephone

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. Abitibi Price Corporation, et al., relating to the Organic Chemicals, Inc. Superfund Site.


FOR DEFENDANT:

3-30-99
Date

Kraft Foods, Inc., successor to
General Foods Corporation d/b/a Carton & Container
Name of Defendant

Three Lakes Drive
Northfield, IL 60093
Address

847-646-6801
Telephone Number

By: Philip M. McAndrew
Name of Officer (please type or print)

Signature of Officer

Director, Environmental Affairs
Title

If different from above, the following is the name and address of Defendant's agent for service and, if Defendant has counsel, the name and address of Defendant's counsel. Counsel may act as agent for service.

Agent for Service

Attorney

Name _____

Name _____

Address

Address

Telephone _____

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. Abinibi Price Corporation, et al., relating to the Organic Chemicals, Inc. Superfund Site.

FOR DEFENDANT:

March 31, 1999
Date

Steelcase Inc., on its own behalf and as successor to
Stow & Davis Furniture Company

Name of Defendant

P.O. Box 1967-PS, Grand Rapids, MI 49501
Address

Telephone Number

By:

616-246-9129

Name of Officer (please type or print)

A. Reggie Chapman
Signature of Officer

Senior Vice President & Chief Financial Officer
Title

If different from above, the following is the name and address of Defendant's agent for service and, if Defendant has counsel, the name and address of Defendant's counsel. Counsel may act as agent for service.

Agent for Service

Jon D. Botsford
Name

901-44th Street SE, Grand Rapids,
Address MI 19508

Attorney

Larry Levine, Latham & Watkins
Name

2335 S. Wacker Drive, Chicago, IL 60606
Address

312-876-7709
Telephone

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. Abitibi Price Corporation, et al., relating to the Organic Chemicals, Inc. Superfund Site.

FOR DEFENDANT:

March 23, 1999

Date

Ford Motor Company

Name of Defendant

The American Road

Dearborn, Michigan 48121

Address

(see below)

Telephone Number

By: Thomas J. DeZure

Name of Officer (please type or print)



Signature of Officer

Assistant Secretary

Title

If different from above, the following is the name and address of Defendant's agent for service and, if Defendant has counsel, the name and address of Defendant's counsel. Counsel may act as agent for service.

Agent for Service

Kathy J. Hofer

Name Ford Motor Company
Three Parklane Blvd.
Suite 1500 West

Address Dearborn, MI
48126-2493

Attorney

Kathy J. Hofer

Name Ford Motor Company
Three Parklane Blvd.
Suite 1500 West

Address Dearborn, MI 48126-2493

(313) 594-1687

Telephone

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. Abitibi Price Corporation, et al., relating to the Organic Chemicals, Inc. Superfund Site.

FOR DEFENDANT:

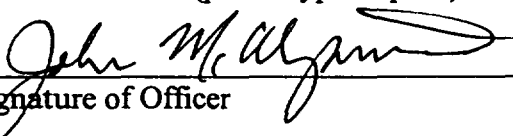
MARCH 30, 1999
Date

THE CROWN GROUP INC. F/K/A MILLER METAL PRODUCTS
Name of Defendant

2111 WALTER REUTHER DRIVE, WARREN MI 48091
Address

(810) 575-9800
Telephone Number

By: JOHN MCALPINE
Name of Officer (please type or print)


Signature of Officer

EXECUTIVE VICE PRESIDENT
Title

If different from above, the following is the name and address of Defendant's agent for service and, if Defendant has counsel, the name and address of Defendant's counsel. Counsel may act as agent for service.

Agent for Service

Attorney

Name

DAN STANLEY
Name

Address

HONIGMAN MILLER SCHWARTZ AND COHN
222 N WASHINGTON SQ STE 400 LANSING MI 4893
Address

(517) 377-0714
Telephone

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. Abitibi Price Corporation, et al., relating to the Organic Chemicals, Inc. Superfund Site.

FOR DEFENDANT:

March 25, 1999

Date

Pharmacia & Upjohn Company f/k/a The Upjohn Company

Name of Defendant

7000 Portage Road, Kalamazoo, MI 49001

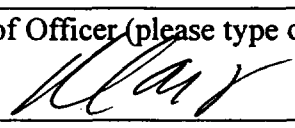
Address

616-833-5343

Telephone Number

By: Rafael Castro

Name of Officer (please type or print)


Signature of Officer

Vice President of Environment & Safety
Title

If different from above, the following is the name and address of Defendant's agent for service and, if Defendant has counsel, the name and address of Defendant's counsel. Counsel may act as agent for service.

Agent for Service

Joan L. Root, Esq.

Name

(same)

Address

Attorney

Joan L. Root, Esq.

Name

Pharmacia & Upjohn Company
7000 Portage Rd., Kalamazoo, MI 49001

Address

616-833-5343

Telephone

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. Abitibi Price Corporation, et al., relating to the Organic Chemicals, Inc. Superfund Site.

3/31/99
Date

FOR DEFENDANT:

BASF Corporation, for itself and as successor
to Inmont Corp. and BASF Wyandotte Corp.

Name of Defendant

3000 Continental Dr. - North
Mt. Olive, New Jersey 07828-1234

Address

973-426-2600

Telephone Number

By: DAVID F. RYER
Name of Officer (please type or print)
Deputy General Counsel &
Assistant Secretary
Signature of Officer
David F. Ryer
Title

If different from above, the following is the name and address of Defendant's agent for service and, if Defendant has counsel, the name and address of Defendant's counsel. Counsel may act as agent for service.

Agent for Service

Office of the General Counsel

Name
BASF Corporation
3000 Continental Dr. - North
Mt. Olive, New Jersey 07828-1234
Address

Attorney

Susan Sadler, Esq.

Name
Dawda, Mann, Mulcahy & Sadler
1533 No. Woodward Ave., Suite 200
Bloomfield Hills, Michigan 48304-2815
Address

248-642-3700

Telephone

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. Abitibi Price Corporation, et al., relating to the Organic Chemicals, Inc. Superfund Site.

FOR DEFENDANT:

March 26, 1999
Date

CHECKER MOTORS CORPORATION
Name of Defendant

216 North Pitcher, Kalamazoo, MI 49007
Address

616/343-6121
Telephone Number

By: Larry D. Temple
Name of Officer (please type or print)


Signature of Officer

Chief Operating Officer
Title

If different from above, the following is the name and address of Defendant's agent for service and, if Defendant has counsel, the name and address of Defendant's counsel. Counsel may act as agent for service.

Agent for Service

George T. Schumacher
Name

222 South Westnedge Avenue
Address
Kalamazoo, MI 49007-4687

Attorney
GEMRICH, MOSER, BOWSER & LOHRMANN LLP
George T. Schumacher
Name

222 South Westnedge Avenue
Address
Kalamazoo, MI 49007-4687
Telephone
616/382-1030

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. Abitibi Price Corporation, et al., relating to the Organic Chemicals, Inc. Superfund Site.

FOR DEFENDANT:

April 1, 1999
Date

Gen Corp, Inc
Name of Defendant

175 Ghent
Address

(330) 869-4337
Telephone Number

By: JOHN FINN
Name of Officer (please type or print)

John Lanni
Signature of Officer

MGR, ENVIRONMENTAL AFFAIRS
Title

If different from above, the following is the name and address of Defendant's agent for service and, if Defendant has counsel, the name and address of Defendant's counsel. Counsel may act as agent for service.

Agent for Service

Attorney

Name _____

Name _____

Address

Address

Telephone _____

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. Abitibi Price Corporation, et al., relating to the Organic Chemicals, Inc. Superfund Site.

FOR DEFENDANT:

3/31/99
Date

NL Industries, Inc.
Name of Defendant

16825 Northchase Dr., Suite 1200
Address

281 / 423 - 3305
Telephone Number

By: David B. Garten
Name of Officer (please type or print)

David B. Garten
Signature of Officer

Vice President, Secretary &
Title General Counsel

If different from above, the following is the name and address of Defendant's agent for service and, if Defendant has counsel, the name and address of Defendant's counsel. Counsel may act as agent for service.

Agent for Service

Name

Address

Attorney

Marcus A. Martin
Name

1630 30th St., Suite 598

Address Boulder, CO 80301

303.442.3950
Telephone

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. Abitibi Price Corporation, et al., relating to the Organic Chemicals, Inc. Superfund Site.

FOR DEFENDANT:

Viacom International Inc., successor to Furniture City Manufacturing and Gulf & Western Industries

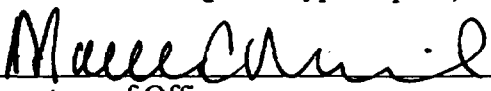
March 22, 1999
Date

Name of Defendant

1515 Broadway, 50th Floor
New York, NY 10036
Address

212/846-7775
Telephone Number

By: Mark C. Morril
Name of Officer (please type or print)


Signature of Officer

Vice President and Deputy General Counsel
Title

If different from above, the following is the name and address of Defendant's agent for service and, if Defendant has counsel, the name and address of Defendant's counsel. Counsel may act as agent for service.

Agent for Service

Jeffrey B. Groy
Name
Viacom International Inc.
111 East Broadway, Suite 1100
Salt Lake City, UT 84111
Address

Attorney

Jeffrey B. Groy
Name
Viacom International Inc.
111 East Broadway, Suite 1100
Salt Lake City, UT 84111
Address

801/359-3193
Telephone

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. Abitibi Price Corporation, et al., relating to the Organic Chemicals, Inc. Superfund Site.

FOR DEFENDANT:

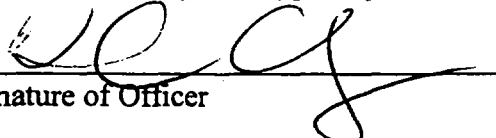
3/30/99
Date

TCI Pacific Communications, Inc., successor to Furniture
Name of Defendant City Manufacturing and Gulf & Western
Industries

9197 S. Peoria Street, Englewood, CO 80112
Address

720-875-4808
Telephone Number

By: Derek Chang
Name of Officer (please type or print)


Signature of Officer

Vice President
Title

If different from above, the following is the name and address of Defendant's agent for service and, if Defendant has counsel, the name and address of Defendant's counsel. Counsel may act as agent for service.

Agent for Service

Terrel E. Davis
Name

9197 S. Peoria St.
Address Englewood, CO 80112

Attorney

Terrel E. Davis
Name

9197 S. Peoria Street, Englewood, CO 80112
~~111 East Broadway, Ste. 1100, Salt Lake City, UT~~
Address ~~84111~~

720-875-4808
Telephone

Telephone

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. Abitibi Price Corporation, et al., relating to the Organic Chemicals, Inc. Superfund Site.

FOR DEFENDANT:

3/23/99
Date

Welchwood Products
Name of Defendant

1539 N. Taylor, Grand Rapids, 49505
Address

363-5017
Telephone Number

By: Blake Fierlund
Name of Officer (please type or print)

[Signature]
Signature of Officer

Manager
Title

If different from above, the following is the name and address of Defendant's agent for service and, if Defendant has counsel, the name and address of Defendant's counsel. Counsel may act as agent for service.

Agent for Service

Attorney

Name

Name

Address

Address

Telephone

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. Abitibi Price Corporation, et al., relating to the Organic Chemicals, Inc. Superfund Site.

FOR DEFENDANT:

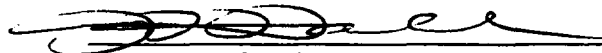
3/29/99
Date

James Hedden & Sons Inc.
Name of Defendant

P.O. Box 1587, FERT SMITH, AR 72902
Address

501-782-8971
Telephone Number

By: J. M. Hall
Name of Officer (please type or print)


Signature of Officer

ASST. SEC. X.
Title

If different from above, the following is the name and address of Defendant's agent for service and, if Defendant has counsel, the name and address of Defendant's counsel. Counsel may act as agent for service.

Agent for Service

Attorney

Name

Name

Address

Address

Telephone

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. Abitibi Price Corporation, et al., relating to the Organic Chemicals, Inc. Superfund Site.

FOR DEFENDANT:

Mar 29, 1999
Date

Rapid Finishing
Name of Defendant

3541 Kenwood SW
Address

(616) 878-1358
Telephone Number

By: Gordon MacTavish
Name of Officer (please type or print)

Gordon MacTavish
Signature of Officer

President
Title

If different from above, the following is the name and address of Defendant's agent for service and, if Defendant has counsel, the name and address of Defendant's counsel. Counsel may act as agent for service.

Agent for Service

Attorney

Name

Name

Address

Address

Telephone

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. Abitibi Price Corporation, et al., relating to the Organic Chemicals, Inc. Superfund Site.

FOR DEFENDANT:

March 29, 1999
Date

MacDonald Industrial Products, Inc.
Name of Defendant

4242 44th Street, S.E. Kentwood, Mi. 49512
Address

(616) 554-6400
Telephone Number

By: Melanie MacDonald-Parent
Name of Officer (please type or print)

Melanie MacDonald-Parent
Signature of Officer

Director of Manufacturing
Title

If different from above, the following is the name and address of Defendant's agent for service and, if Defendant has counsel, the name and address of Defendant's counsel. Counsel may act as agent for service.

Agent for Service

Attorney

Name _____

Name _____

Address

Address

Telephone _____

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. Abitibi Price Corporation, et al., relating to the Organic Chemicals, Inc. Superfund Site.

FOR DEFENDANT:

3-30-99
Date

Lowell Engineering
Name of Defendant

6151 Bancroft Ave
Address

616-868-6122
Telephone Number

By: PETER SMITH
Name of Officer (please type or print)

[Signature]
Signature of Officer

GENERAL MANAGER
Title

If different from above, the following is the name and address of Defendant's agent for service and, if Defendant has counsel, the name and address of Defendant's counsel. Counsel may act as agent for service.

Agent for Service

Dickinson Wright
Name

Attorney

Jim O'Connor
Name

200 Ottawa NE, Great Falls, MT
Address

59503

Address

616-336-1016
Telephone

Ellen S. Friedell Esq.
Name Assistant General Counsel
Rohmand Haas Company
100 Independence Mall West
Address Phila. Pa. 19106
215-592-2582
Telephone

3/19/99
Date

Telephone

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. Abitibi Price Corporation, et al., relating to the Organic Chemicals, Inc. Superfund Site.

FOR DEFENDANT:

SmithKline Beecham Corporation, a Pennsylvania corporation,
successor to Smith Kline & French Laboratories, and

Date

~~SmithKline Corporation~~

Name of Defendant

One Franklin Plaza

200 North 16th Street

~~Philadelphia, PA 19102~~

Address

(215) 751-7059

Telephone Number

By: Donald F. Parman

Name of Officer (please type or print)

Donald F. Parman

Signature of Officer

Secretary

Title

If different from above, the following is the name and address of Defendant's agent for service and, if Defendant has counsel, the name and address of Defendant's counsel. Counsel may act as agent for service.

Agent for Service

Attorney

Paul Noll

Paul Noll

Name

SmithKline Beecham Corporation

One Franklin Plaza

~~200 North 16th Street~~

Address Philadelphia, PA 19102

Name

SmithKline Beecham Corporation

One Franklin Plaza, 200 North 16th Street

~~Philadelphia, PA 19102~~

Address

(215) 751-7059

Telephone

Telephone

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. Abitibi Price Corporation, et al., relating to the Organic Chemicals, Inc. Superfund Site.

FOR DEFENDANT:

March 24, 1999
Date

Witco Corporation, successor to Richardson Chemical
Name of Defendant Company

One American Lane, Greenwich, CT 06831-2559
Address

(203) 552-2814
Telephone Number

By: Edgar J. Smith, Jr.

Name of Officer (please type or print)

Edgar J. Smith, Jr.
Signature of Officer

General Counsel
Title

If different from above, the following is the name and address of Defendant's agent for service and, if Defendant has counsel, the name and address of Defendant's counsel. Counsel may act as agent for service.

Agent for Service

Attorney

Prentice Hall Corp. System, Inc.
Name

N/A
Name

601 Abbott Rd., East Lansing, MI
Address

Address

Telephone

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. Abitibi Price Corporation, et al., relating to the Organic Chemicals, Inc. Superfund Site.

FOR DEFENDANT:

3/26/99
Date

Gulf Oil Chemicals Company
Name of Defendant
C/o Chevron Environmental Management Co.
Address 6001 Bollinger Canyon Drive
San Ramon CA 94583-0712

Telephone Number (925) 842-1755

By: Robert D. Mihalovich
Name of Officer (please type or print)

[Signature]
Signature of Officer

Project Manager - Superfund
Title

If different from above, the following is the name and address of Defendant's agent for service and, if Defendant has counsel, the name and address of Defendant's counsel. Counsel may act as agent for service.

Agent for Service

Attorney

Name

Name

Address

Address

Telephone

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. Abitibi Price Corporation, et al., relating to the Organic Chemicals, Inc. Superfund Site.

FOR DEFENDANT:

3/26/99
Date

Onyx Chemical Company
Name of Defendant

c/o Chevron Environmental Management Co.
Address

6001 Bollinger Canyon
San Ramon CA 94583-0712

Telephone Number (925) 842-1755

By: Robert D. Mihalovich
Name of Officer (please type or print)

[Signature]
Signature of Officer

Project Manager - Superfund
Title

If different from above, the following is the name and address of Defendant's agent for service and, if Defendant has counsel, the name and address of Defendant's counsel. Counsel may act as agent for service.

Agent for Service

Attorney

Name

Name

Address

Address

Telephone

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. Abitibi Price Corporation, et al., relating to the Organic Chemicals, Inc. Superfund Site.


March 29, 1999
Date

FOR DEFENDANT: Difco Laboratories, Inc.
c/o Becton Dickinson and Company
Name of Defendant

1 Becton Drive, Franklin Lakes, NJ 07
Address

(201) 847-7107
Telephone Number

By: BRIDGET M. HEALY
Name of Officer (please type or print)


Signature of Officer

Vice President and Secretary
Title

If different from above, the following is the name and address of Defendant's agent for service and, if Defendant has counsel, the name and address of Defendant's counsel. Counsel may act as agent for service.

Agent for Service

Attorney

Name

Name

Address

Address

Telephone

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. Abitibi Price Corporation, et al., relating to the Organic Chemicals, Inc. Superfund Site.

March 18, 1999

Date

FOR DEFENDANT:

Boehringer Ingelheim Vetmedica, Inc., successor to
Philips Roxane, Inc.

Name of Defendant

2621 North Belt Highway
St. Joseph, MO 64506-2002

Address

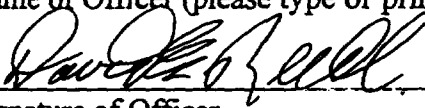
(816) 233-2571

Telephone Number

By:

Dr. David E. Reed

Name of Officer (please type or print)



Signature of Officer

Vice President - Operations

Title

If different from above, the following is the name and address of Defendant's agent for service and, if Defendant has counsel, the name and address of Defendant's counsel. Counsel may act as agent for service.

Agent for Service

Allyn M. Carnam, Esquire

Name

Boehringer Ingelheim Corporation
900 Ridgebury Road
Ridgefield, CT 06877

Address

Attorney

Allyn M. Carnam, Esquire

Name

Boehringer Ingelheim Corporation
900 Ridgebury Road
Ridgefield, CT 06877

Address

(203) 798-4825

Telephone

Telephone

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. Abitibi Price Corporation, et al., relating to the Organic Chemicals, Inc. Superfund Site.

FOR DEFENDANT:

March 29, 1999

Date

Koch Chemical Company

Name of Defendant
P.O. Box 2256
Wichita, KS 67201

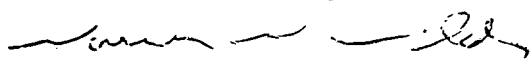
Address

(316) 828-5119

Telephone Number

By: Warren W. Wilder

Name of Officer (please type or print)



Signature of Officer
Vice President

very sick TSP

Title

If different from above, the following is the name and address of Defendant's agent for service and, if Defendant has counsel, the name and address of Defendant's counsel. Counsel may act as agent for service.

Agent for Service

Koch Industries, Inc.

Name
P.O. Box 2256
Wichita, KS 67201

Address

Attorney

General Counsel

Name
P.O. Box 2256
Wichita, KS 67201

Address
(316) 828-5500

Telephone

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. Abitibi Price Corporation, et al., relating to the Organic Chemicals, Inc. Superfund Site.

FOR DEFENDANT:

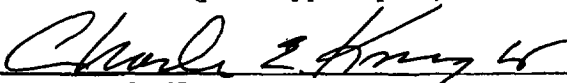
March 31, 1999
Date

Tag Chemical, Inc.
Name of Defendant

27777 Franklin Road, Suite 1080, Southfield, MI 48034
Address

(248) 354-1772
Telephone Number

By: Charles Knight
Name of Officer (please type or print)


Signature of Officer

President
Title

If different from above, the following is the name and address of Defendant's agent for service and, if Defendant has counsel, the name and address of Defendant's counsel. Counsel may act as agent for service.

Agent for Service

Wade A. Myers
Name

1142 S. Main St., Plymouth, MI 48170
Address

Attorney

Wade A. Myers
Name

1142 S. Main St., Plymouth, MI 48170
Address

(734) 414-8431
Telephone

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States V. Abitibi Price Corporation, et al., relating to the Organic Chemicals, Inc. Superfund Site.

FOR DEFENDANT:

KONICA GRAPHIC IMAGING INTERNATIONAL, INC.
f/k/a KONICA IMAGING, U.S.A., INC.
f/k/a CHEMCO TECHNOLOGIES, INC.
f/k/a POWERS CHEMCO, INC.
a/k/a POWERS CHEMICAL COMPANY
f/k/a POWERS PHOTO ENGRAVING COMPANY

3/24/99
Date

Toshio Nagatani
By: **T. Nagatani**
Its: **President**

71 Charles Street
Glen Cove, New York 11542-9001
Attention: Environmental & Safety Manager
Telephone: (516) 674-2500
Facsimile: (516) 674-4122

If different from above, the following is the name and address of Defendant's agent for service and, if Defendant has counsel, the name and address of Defendant's counsel. Counsel may act as agent for service.

Agent for Service

Name

Address

Attorney

JAMES T. WEINER, P.C.
30600 Telegraph, Suite 3350
Bingham Farms, Michigan 48025-4533
Telephone: (248) 901-0750
Facsimile: (248) 901-0500

THE UNDERSIGNED PARTY enters into this Consent Decree in the matter of United States v. Abitibi Price Corporation, et al., relating to the Organic Chemicals, Inc. Superfund Site.

FOR DEFENDANT:

3-19-99
Date

Essex Group, Inc.
Name of Defendant

1601 Wall Street, P.O. Box 1601
Address Fort Wayne, IN 46801-1601

(219) 461-4439
Telephone Number

By: Debra F. Minott
Name of Officer (please type or print)

Debra F. Minott
Signature of Officer

Executive Vice President
Title

If different from above, the following is the name and address of Defendant's agent for service and, if Defendant has counsel, the name and address of Defendant's counsel. Counsel may act as agent for service.

Agent for Service

Jeffrey K. Haynes

Name
74 E. Long Lake Rd., 2nd Fl.
Bloomfield Hills, MI
Address 48303-0249

Attorney

Jeffrey K. Haynes

Name
74 E. Long Lake Road, Second Floor
P.O. Box 249
Address Bloomfield Hills, MI 48303-0249
(248) 647-0600
Telephone

APPENDIX A

STATE OF MICHIGAN



JOHN ENGLER, Governor

DEPARTMENT OF ENVIRONMENTAL QUALITY

HOLLISTER BUILDING, PO BOX 30473, LANSING MI 48909-7973

INTERNET: <http://www.deq.state.mi.us>

RUSSELL J. HARDING, Director

January 17, 1997

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SUPERFUND DIVISION
OFFICE OF THE DIRECTOR

Mr. William E. Muno, S-6J
Director, Superfund Division
U.S. Environmental Protection Agency, Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604-3590

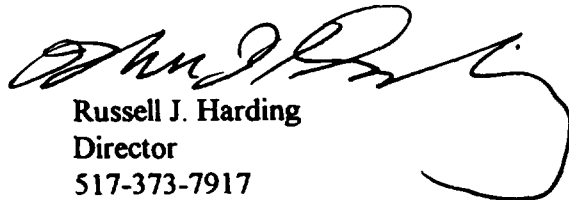
Dear Mr. Muno:

SUBJECT: Record of Decision (ROD) for the Organic Chemicals, Inc. (OCI) Superfund Site,
Grandville, Michigan

The Michigan Department of Environmental Quality (MDEQ) is pleased to concur with the ROD
for the OCI Superfund site.

Please provide a copy to the MDEQ once it has been signed. If you have any questions, please
feel free to contact Mr. Ardon Toland, Chief, Superfund Section, Environmental Response
Division, at 517-373-8815, or you may contact me.

Sincerely,


Russell J. Harding
Director
517-373-7917

cc: Mr. Valdas V. Adamkus, EPA
Mr. Alan J. Howard, MDEQ
Mr. Ardon Toland, MDEQ
Dr. George Carpenter, MDEQ
Mr. William Harmon, MDEQ

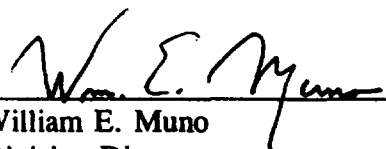
Statutory Determinations

The two operable units, which deal with the contaminated soil, and contaminated ground water, are protective of human health and the environment, comply with Federal and State requirements that are legally applicable or relevant and appropriate to the remedial action, and are cost-effective. However, because treatment of the principal threat of the site was not found to be practicable, this remedy does not satisfy the statutory preference for treatment as a principle element.

Because these remedies will result in hazardous substances on-site above health based levels, a review will be conducted within five years after commencement of the remedial action to ensure that the remedy continues to provide adequate protection of human health and the environment.

State Concurrence

The State of Michigan concurs with the selected remedy. The Letter of Concurrence is attached to this Record of Decision.



William E. Muno
Division Director

2/5/97
Date

RECORD OF DECISION
SELECTED REMEDIAL ALTERNATIVE
FOR THE
ORGANIC CHEMICALS, INC. SITE
GRANDVILLE, MICHIGAN

Statement of Basis and Purpose

This decision document presents the selected remedial action for the Organic Chemicals Inc., site in Grandville, Michigan, which was chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This decision is based on the administrative record for this site.

The State of Michigan concurs with the selected remedy.

Assessment of the Site

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action in this Record of Decision (ROD), may present an imminent and substantial endangerment to public health, welfare, or to the environment.

Description of the Selected Remedy

This ROD addresses the second Operable Unit (OU), or discrete action at the Site. The first OU was an interim action to contain the contaminated groundwater plume. The second OU is the final action at the site and will address the low level (groundwater) and principal threats at the site (contaminated soil). The selected remedy consists of the following components:

- Continued operation and maintenance of the existing ground-water extraction system in the upper ground-water system to the USEPA Maximum Contaminant Limits at an Alternate Point of Compliance determined through institutional controls. Maintain the groundwater extraction and treatment system until the MCLs are attained throughout the contaminated plume.
- Excavation of approximately 6,000 cubic yards of contaminated soil and on-site remediation by solidification/stabilization.

**Decision Summary for the Record
of Decision
Organic Chemicals, Inc. Site
Grandville, Michigan**

I. Site Name, Location, and Description

The Organic Chemicals Inc. (OCI) property is located at 3291 Chicago Drive, S.W., in the city of Grandville, Kent County, Michigan (the "Site"). The OCI property, approximately 5 acres, is fenced, with several buildings, structures, and storage tanks occupying the Site (Figures 1 and 2) which extends over several properties. The Chesapeake and Ohio Railroad, which runs southeast of the facility and along the north side of Chicago Drive, has an elevated railbed acting as a barrier to surface drainage. A drainage ditch exists on the west side of the OCI Site. There is no visible surface drainage linking the Site and the Grand River, which is located approximately 0.95 miles north. Two gravel quarries have been identified near the OCI Site. One quarry is located 0.3 miles northwest, and the other quarry is 0.2 miles northeast of the Site. Both quarries are inactive and filled with water.

The OCI property has several buildings and structures occupying the property. The chemical manufacturing operation, which is housed in two buildings along the western boundary of the property, produced small quantities of specialized industrial chemicals and pharmaceutical intermediates. The solvent recovery operation is housed in several buildings along the southeastern portion of the property. Other structures include a warehouse, several drum and storage tank areas, an office building, a boiler facility and a waste water pretreatment facility. OCI stopped operations in May 1991, because of financial problems and the inability to obtain a Resource Conservation and Recovery Act (RCRA) Part B permit. OCI completed RCRA closure of the equipment and tanks in 1992.

Two railroad sidings parallel the southern and eastern OCI property boundaries (Figure 2). Along the sidings are the remnants of a series of aboveground storage tank facilities. Although the tanks no longer exist, the concrete footings and underground piping connections remain.

The OCI property is bordered by Packaging Corporation of America on the east, by the former Haven-Busch Co. on the west, and by Grand Rapids Gravel Co. on the north and these properties are also part of the OCI Site. The property directly north and northwest of OCI has a lower ground surface elevation due to earlier sand and gravel mining activities. Residential areas are approximately 200 feet southeast of the Site and 1700 feet to the southwest.

II. Site History and Enforcement Activities

A. Site History

The OCI Site is situated approximately 0.95 miles southeast of the Grand River. The Site was previously used for petroleum refining from 1941 to 1945, and transport and storage operations from 1945 to 1966. A succession of petroleum-related industries leased the land prior to its purchase by Spartan Chemicals. Anne R. Herald, owner of the property from approximately 1900 to 1942, issued an oil and gas lease for the entire property to Gerald J. Wagner on December 7, 1937. Mr. Wagner then leased the premises for oil and gas exploration to various third parties. During tenure of these leaseholds, two oil production wells were drilled onsite. One was a dry hole and the other was never completed or maintained. Attempts made to identify the exact locations of these wells by reviewing existing data were unsuccessful.

All oil and gas exploration leases were summarily voided by Ms. Herald on February 7, 1941. Other petroleum industry operations including a refinery commenced onsite in the early 1940's. Total Pipeline Corporation, a petroleum transporter, leased an oil and gasoline warehouse and tank facility onsite during this period. Its facilities were then taken over by its parent company, Total Petroleum, Inc., which operated onsite through 1964. Leonard Fuels purchased the Site in 1964 and sold the property to Total Realty in 1966. In 1968, Spartan Chemical Company acquired the Site property for the solvent reclamation and chemical manufacturing operations of its subsidiary, Organic Chemicals Company (now Organic Chemicals, Inc.). Organic Chemicals, Inc. (OCI) has operated on the Site since 1968. In 1979, OCI became the owner of the premises by conveyance of deed from Spartan Chemical Company.

Historical aerial photographs, taken from 1960 through 1978, show changes to the physical facilities of the OCI Site. In a 1960 photograph, three large vertical tanks with two sumps for containing spills were present along the northwestern portion of the former refinery. By 1967, these tanks were no longer present. In 1973, the terrain on the western portion of the former refinery was being regraded and leveled. The ground was visibly scarred from earth moving activity. In this same year there was a seepage lagoon on the OCI property which appeared to contain liquid waste. Two new buildings and six additional vertical storage tanks had been added to the facility in 1973. A 1978 aerial photograph indicates that the west portion of the former refinery was abandoned. This area was owned by Haven-Busch, Co. and was being used as an open storage yard for this steel fabrication company. Haven-Busch, Co. has since closed both their corporate office and their steel fabrication plant and has been sold to Padnos Iron and Metal.

In March 1976, a water well was drilled on the OCI property. The well was 165 feet deep and was used to provide plant production and cooling water. Because of various problems with the performance of the well, it was abandoned and the plant returned to the use of water supplied by the city of Grandville.

A chemical fire occurred onsite on October 11, 1976, damaging part of the OCI facilities. The cause of the blaze was reported as being started by a spark from a metal drum dragged across a floor. The spark ignited barrels of solvents stored nearby. According to retired Grandville Fire Chief Osterink, the fire was contained in the building and prevented from spreading to other storage tanks outside.

A chemical spill at the Site in November, 1979, was reported to the Michigan Department of Environmental Quality (MDEQ) by OCI. On November 3, 1979, 2,200 gallons of lacquer thinner were spilled by an operator onto the ground onsite. Some of the spilled lacquer thinner was recovered and disposed of in the onsite seepage lagoon.

The OCI Site was classified, on April 14, 1980, as a potential hazardous waste site by the United States Environmental Protection Agency (EPA). The Site was listed on the National Priority List on September 8, 1983. The EPA summarized the problem in its Potential Hazardous Waste Site log as "known groundwater contamination by organic solvents." Between 1968 and 1980, company records indicate that OCI discharged its process waste and cooling water, which included F001-F005 hazardous wastes into the onsite seepage lagoon. In June 1980, OCI ceased discharge of wastewater to the seepage lagoon. In 1980, the company installed a wastewater pretreatment facility with discharge to the City of Grandville Sanitary Sewer system. The pretreatment facility included two 9,000 gallon sedimentation tanks and a 30,000 gallon aeration basin with pH adjustment.

In September 1981, seepage lagoon sludges were excavated and transferred to railroad cars. The total removed soil filled approximately seven railroad cars. These sludges were disposed of at Chem-Met Services, Inc. in Wyandotte, Michigan.

A Preliminary Assessment (PA) for the Site was completed by EPA in 1983. The PA documented potential groundwater contamination from the solvent-contaminated seepage lagoon. Soils beneath this pond were also found to be contaminated. A potential for drinking water contamination and endangerment of flora and fauna in nearby potential wetlands was indicated in the PA.

In September 1986, MDEQ Law Enforcement Division personnel responded to a complaint of alleged illegal disposal of hazardous wastes at the facility. Reportedly, OCI personnel were disposing of sludges and other residues generated from the solvent recovery operations by placing these materials into drums and rolloff containers along with their normal nonhazardous solid waste materials. Analyses taken from solid waste storage units (rolloffs and 55 gallon drums) located at the Site revealed the presence of various contaminants including methylene chloride, toluene, ethylbenzene, xylenes and arochlor 1242 polychlorinated bi-phenyls (PCBs). Analyses of soil samples taken from the vicinity of the solid waste storage units revealed the presence of methylene chloride, toluene, xylenes, 1,1,1-trichloroethane, trichloroethene, tetrachloroethene, chloroform, 1,1-dichloroethene, 1,2-dichloroethene, and Aroclor 1242 (PCBs).

As a result of this investigation, OCI was cited by the EPA on December 3, 1986, to be in violation of RCRA. Among the violations cited were: (1) the unreported generation of hazardous waste from a drum cutting operation; (2) the routine transport of hazardous waste from the Site by unauthorized agents; (3) failure to prepare hazardous waste manifests, and (4) shipment of hazardous waste to unauthorized facilities. Based on these findings, the EPA levied fines of \$22,500 on OCI.

During August/September 1987, OCI conducted a voluntary investigation in cooperation with MDEQ. Approximately 150 buried drums were discovered and removed from the southwest corner of the OCI warehouse building. Some of these drums contained sludge and liquid residues. Groundwater samples taken at that time from Prein & Newhof's monitoring well, B-11, indicated the presence of 1,1-dichloroethene, 1,1-dichloroethane, cis-1,2-dichloroethene, dibromochloromethane, toluene, ethylbenzene, and xylenes. Monitoring well B-11 was located south and slightly west of the warehouse building. The drum burial area was excavated down to approximately 17 feet below grade. Soil samples from the bottom of the excavation indicated methylene chloride (13 ug/kg) and tetrachloroethene (2.7 ug/kg) contamination.

B. Previous Investigations

In November 1979, the MDEQ requested that OCI perform a hydrogeological study to investigate suspected groundwater contamination. This study, conducted in four phases, was completed in October 1981. It concluded that the groundwater flow in the upper groundwater system at the Site was northwesterly towards the Grand River. Soil borings identified a sand and gravel aquifer existed over a clay layer. The elevation of the top of the clay layer was found to vary throughout the area. It was deepest below the area of the former seepage pond. The elevation of the top of the clay layer was found to be shallowest 1,000 feet west of the OCI property. This clay mound west of the Site re-directs the westward movement of groundwater to flow around the mound.

Twenty-four monitoring wells were installed during this study. Analysis of monitoring wells north and west of the former seepage pond revealed the following contaminants: methylene chloride, toluene, 1,1-dichloroethene, trans 1,2-dichloroethene, 1,2-dichloroethane, trichloroethene, benzene, chlorobenzene, ethylbenzene, pentachlorophenol, xylene, acetone, 1-propanol, 4-methyl-2 pentanone, trifluoromethylbenzene, naphthalenes, and various aliphatic hydrocarbons.

Analyses of surface soil samples taken from the OCI facility revealed the presence of methylene chloride, toluene, xylenes, 1,1,2-trichloroethane, trichloroethene, tetrachloroethene, chloroform, 1,1-dichloroethene, 1,2-dichloroethene and Aroclor 1242 (PCB).

The investigation also attempted to determine the rate of groundwater flow. Using soil samples obtained during the different phases of the investigation and the hydraulic gradient

determined from groundwater elevations, the rate of groundwater flow was estimated by the Kozeny-Carmen Equation. Due to the various soil strata encountered, which have various amounts of fines in the gravel, it was extremely difficult to accurately determine the rate of groundwater flow. The calculations indicated that the groundwater flow rate may vary from approximately 0.3 feet per day to as high as 1.5 feet per day or possibly higher in localized areas of extremely high permeability.

In the fall of 1988, EPA and the ARCS V project team conducted preliminary field investigation (PFI) activities with the objective of further characterizing the OCI Site. A description of PFI activities can be found in the PFI Quality Assurance Project Plan (QAPP). The information gathered during the PFI was incorporated in the planning and implementation of the Phase I Remedial Investigation (RI) activities. Analytical results obtained during the PFI study are presented in Appendix C of the Focused Feasibility Study (FFS).

C. CERCLA Enforcement

On March 30, 1988, a letter was sent to both OCI and Spartan Chemical pursuant to Section 122(a) of CERCLA informing them that work pursuant to 104(a) of CERCLA would be undertaken by EPA because OCI and Spartan lacked the financial capability to perform an RI/FS. On April 9, 1991, a General Notice letter was sent to OCI and Spartan; also on April 9, 1991, a General Notice Letter and Information Request was sent to 182 Potentially Responsible Parties (PRPs) who were customers of OCI and are considered generators of hazardous waste at OCI, pursuant to Section 107(a)(3) of CERCLA. On January 6, 1992, a Unilateral Administrative Order was sent to the 182 PRPs pursuant to Section 106 of CERCLA. On September 21, 1992, a De Minimis Administrative Order on Consent was executed with 100 PRPs providing for payment of past costs in the amount of \$1,384,714. The settlement was pursuant to Section 122(g)(4) of CERCLA. On June 5, 1995, a General Notice Letter and Information Request was sent to 5 PRPs, pursuant to Section 107(a)(3) of CERCLA, who had contracted with OCI for the manufacture of chemicals.

III. Highlights of Community Participation

A Community Relations Plan was finalized for the OCI Site in February 1989. This document lists contacts and interested parties throughout the government and the local community. It also established communication pathways to ensure timely dissemination of pertinent information. A fact sheet outlining the RI sampling program was distributed in May of 1989. An RI public availability session was held on May 10, 1989. A second fact sheet was distributed in January of 1991, outlining this interim action for the upper ground-water system. The FFS was finalized on July 17, 1991. The Proposed Plan for the interim action at the OCI Site was released to the public on July 18, 1991. The Proposed Plan for the final action at the OCI Site was released on July 12, 1996. All of these documents, including the analytical data upon which this decision was based, were made available in both the Administrative Record and the information repository maintained at the Grandville Public

Library at 3141 Wilson Avenue in Grandville. The notice of availability of these documents was published in the Grand Rapids Press (Grandville Edition) on July 11, 1996, and the Grand Valley Advance on July 16, 1996.

A public comment period was held from July 22 through August 20, 1991, for the interim action and the comment period for the final action was held from July 15 through August 28, 1996. A public meeting was held on August 6, 1991, to present the result of the FFS and the preferred alternative as presented in the Proposed Plan for the interim action. The ROD was signed on September 30, 1991. A public meeting was held on July 16, 1996, to present the results of the Phase II Remedial Investigation, Final Feasibility Study (FS) and the preferred alternative as presented in the Proposed Plan for the final action. All significant comments which were received by EPA prior to the end of the second public comment period, including those expressed verbally at the second public meeting, are addressed in the Responsiveness Summary, which is attached to this Record of Decision.

IV. Scope of Response Action

EPA had organized this project into two response actions. The first response action was an interim action to address contamination in the upper ground-water system (UGS) by stopping the contaminant plume migration. The final action will remediate the ground water to comply with Maximum Contaminant Limits (MCLs), and the soil contamination to be protective in an industrial setting.

The soil which is the principle threat at the Site will be addressed by excavation of approximately 6,000 cubic yards of the contaminated soil and on-site treatment by solidification/stabilization. Contamination associated with past oil related activities at the Site are being addressed by MDEQ under the State voluntary cleanup program.

V. Site Characteristics

The primary contaminants at the Site are associated with the past operation of the seepage pit by OCI, chemical spills at the Site and past oil related activities. These areas are: the former seepage lagoon, the former lacquer thinner spill Site and petroleum sludge lagoons. The total organic compounds in soil exceeds 2,747,000, 85,600 and 149,000 ug/kg, respectively, at these areas. (Figure 3) These contaminants include elevated levels of chlorinated solvents and benzene, ethylbenzene, toluene, and xylene (BETX) compounds. Lower concentrations of other volatile and semi-volatile organic compounds were also detected. The nature and extent of contamination is presented in the FFS and Phase II RI report and summarized in the following sections.

A. Hydrogeologic Characteristics and Groundwater Contamination

Shallow groundwater at the OCI Site occurs in the saturated unconfined deposits of sand and gravel, which range in thickness from 4 to 30 feet. There are no known residential wells

that draw water from these deposits. The sand and gravel deposits are underlain by clay throughout the Site except at SB-10 (Figures 4 through 8) and SB-16, which encountered shale directly below the sand and gravel deposits. See Figure 9 for the location of soil borings. The thickness of the clay varies from 0 feet at SB-10 to 35.5 feet at MW-20. The sand and gravel aquifer will be referred to as the upper groundwater system (UGS). The Michigan formation underlies the clay unit and consists of interbedded gypsum, limestone and shale with occasional sandstone lenses. The Marshall Sandstone formation underlies the Michigan formation and is the source of groundwater for private and industrial wells and is a Class I aquifer. Residential areas are located to the southeast and southwest of the Site. The groundwater systems which lie beneath the clay will be referred to as the lower groundwater system (LGS).

Ground water flow in the unconsolidated deposits is to the northwest towards the Grand River. Ground water flow in the LGS also appears to move in a westerly, northwesterly direction across the Site.

The LGS is a confined and locally unconfined (where the clay unit is not present). The hydraulic conductivity for the LGS range from 1.86×10^{-6} cm/sec to 2.09×10^{-3} cm/sec. The hydraulic conductivity in UGS monitoring wells screened in coarse grained sediments (predominantly sand and/or gravel) range from 2.86×10^{-4} centimeters per second (cm/sec) to 5.14×10^{-2} cm/sec. Monitoring well MW-9 is an exception to this range with a hydraulic conductivity of 6.97×10^{-5} cm/sec; however, MW-9 is screened across the sand and gravel unit to clay unit interface.

B. Phase I Groundwater Monitoring

Two rounds of groundwater samples were collected from 25 of the 26 monitoring wells installed during the Phase I field investigation (Figure 10). The results of this sampling are documented in the previous ROD for the Site and presented in Figures 11 and 12.

C. Phase II RI Groundwater Monitoring

Two rounds of groundwater samples were collected from the Phase I and II monitoring wells during June 9 through 16, 1993, and September 20 through 25, 1993 (Figure 10). These samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides, PCBs, metals, and cyanide. Figures 13 and 14 summarize this information.

C.1 Volatile Organic Compounds

The highest VOC concentrations detected during groundwater sampling rounds 1 and 2 occurred at the following monitoring wells: MW-1 (round 2: 2,523 $\mu\text{g/L}$) and MW-27 (round 2: 2,623 $\mu\text{g/L}$). The principal contaminants detected at MW-1 were 1,2-dichloroethene (565 $\mu\text{g/L}$), trichloroethene (195 $\mu\text{g/L}$), benzene (155 $\mu\text{g/L}$), toluene (660 $\mu\text{g/L}$), chlorobenzene

(205 $\mu\text{g/L}$), ethylbenzene (310 $\mu\text{g/L}$), and xylene (345 $\mu\text{g/L}$). The principal contaminants detected at MW-27 were 1,1,2-trichloroethane (18 $\mu\text{g/L}$), benzene (36 $\mu\text{g/L}$), toluene (170 $\mu\text{g/L}$), chlorobenzene (99 $\mu\text{g/L}$), ethylbenzene (400 $\mu\text{g/L}$), and xylene (1,900 $\mu\text{g/L}$). These wells are associated with the former seepage lagoon and former oil refinery.

VOC tentatively identified compounds (TICs) ranged from 0 to 2,124 $\mu\text{g/kg}$. Four locations had TICs greater than 1,000 $\mu\text{g/kg}$: MW-27 (1,354 $\mu\text{g/L}$; round 1), MW-28 (1,092 $\mu\text{g/L}$; round 1), MW-29 (2,124 $\mu\text{g/L}$; round 1), and MW-31 (1,148 $\mu\text{g/L}$; round 1).

C.2 Semivolatile Organic Compounds

The highest concentrations of total SVOCs were detected at the following monitoring wells: MW-1 (413 $\mu\text{g/L}$; round 2), MW-20 (160 $\mu\text{g/L}$; round 1), MW-28 (100 $\mu\text{g/L}$; round 1), and MW-31 (78 $\mu\text{g/L}$; round 1). Monitoring wells MW-1 and MW-28 are associated with the former seepage lagoon and former oil refinery. Compounds detected in samples collected from monitoring wells MW-20 and MW-31 contained a common laboratory contaminant (i.e., bis-2-ethylhexylphthalate) or were qualified "B" because they also were found in corresponding rinsate blanks.

Principal contaminants detected at MW-1 were naphthalene, 2-methylnaphthalene, N-nitrosodiphenylamine, and carbazole. The principal contaminants detected at MW-28 were naphthalene and 2-methylnaphthalene.

C.3 Pesticides/PCBs

The following pesticides and PCBs were detected in groundwater samples collected from MW-1 and MW-8: MW-1 (round 2: aldrin, 0.033 $\mu\text{g/L}$; endrin ketone, 0.11 $\mu\text{g/L}$; Arochlor 1248, 2.0 $\mu\text{g/L}$) and MW-8 (round 1: Arochlor 1242 at 1.6 $\mu\text{g/L}$). These compounds were not detected in other rounds of sampling or in these wells before the Phase II RI.

C.4 Metals and Cyanide

Inorganic elements were detected at varying degrees at all monitoring wells (Figures 13 and 14). To evaluate the data, inorganic concentrations detected in rounds 1 and 2 of MW-17 groundwater samples were assumed to represent naturally occurring background levels in the UGS. Similarly, inorganic concentrations detected in the round 1 and 2 MW-20 groundwater samples were assumed to represent naturally occurring background levels in the LGS. These wells are located approximately 500 feet upgradient of the Site in a residential setting. Table 1 lists the background concentrations for UGS and LGS wells encountered during the Phase II investigation. The analytical data was used to determine those locations that exceeded five times background concentrations. Table 2 presents the results of this determination.

Eleven inorganic contaminants were detected in concentrations significantly above background (i.e., greater than five times): arsenic, barium, calcium, chromium, copper, iron, magnesium, manganese, potassium, sodium, and zinc (Table 2).

D. Comparison Between 1989 and 1993 Groundwater Analytical Results

Comparison between the Phase I (1989) and the Phase II (1993) groundwater analytical results show some important trends in the data: decreased contaminant concentrations at MW-1 and MW-2, increased contaminant concentrations at MW-4 and MW-27, and a general decrease in VOCs and SVOCs in outlying monitoring wells (i.e., MW-3, MW-5, MW-6, MW-8, MW-9, and MW-11).

Groundwater VOC and SVOC concentrations at MW-1 and MW-2 apparently decreased between 1989 and 1993. Average VOC concentrations at MW-1 and MW-2 during 1989 sampling were 29,684 and 53,523 $\mu\text{g/L}$, respectively. Whereas, average VOC concentrations at MW-1 and MW-2 during 1993 sampling were 1,398 and 135 $\mu\text{g/L}$, respectively; a decrease in concentration of approximately 95 and 99 percent, respectively occurred. Similarly, average SVOC concentrations at MW-1 and MW-2 during 1989 sampling were 1,569 and 805 $\mu\text{g/L}$, respectively. Whereas, average SVOC concentrations at MW-1 and MW-2 during 1993 sampling were 287 and 6 $\mu\text{g/L}$, respectively, a decrease in concentration of approximately 82 and 99 percent, respectively occurred.

Groundwater VOC and SVOC concentrations at MW-4 and MW-27 (a Phase II well nest) apparently increased between 1989 and 1993. Average VOC and SVOC concentrations at MW-4 during 1989 sampling were 142 and 12 $\mu\text{g/L}$, respectively. Whereas, average VOC and SVOC concentrations at MW-4 and MW-27 during 1993 sampling were 1,371 and 27 $\mu\text{g/L}$, respectively.

Contaminant isopleths were drawn to visualize changes between 1989 and 1993 groundwater conditions (Figure 12 and 14). The following conclusions can be drawn from evaluation of these contours: 1) apparently, the aerial extent of the 100 $\mu\text{g/L}$ plume has increased between 1989 and 1993; 2) apparently, the aerial extent of the 1,000 $\mu\text{g/L}$ plume has decreased between 1989 and 1993; and 3) the center of the plume seems to have shifted to the west of the OCI Site.

E. Phase II Residential Well Analytical Results

Three residential well samples were collected for analysis of VOCs during the Phase II RI: PW-2, PW-3, and PW-5. No VOCs were detected in PW-3. The following VOCs were detected in PW-2: acetone (14 $\mu\text{g/L}$), carbon disulfide (1 $\mu\text{g/L}$), chloroethane (0.3 $\mu\text{g/L}$), chloromethane (13 $\mu\text{g/L}$), 1,2-dichloroethane (17 $\mu\text{g/L}$), and 1,2-dichloropropane (0.4 $\mu\text{g/L}$). In PW-5, toluene was detected at a concentration of 0.1 $\mu\text{g/L}$.

PW-2 analytical results are anomalous because no other bedrock wells screened in the Marshall Sandstone (i.e., MW-41, MW-42, PW-2, and PW-5) contained such high concentrations of chlorinated organics. Furthermore, no VOCs were detected in PW-2 during Phase I RI sampling. In addition, although PW-3 is located just 300 feet away from PW-2, the sample and duplicate sample collected from PW-3 contained no detectable VOC concentrations.

F. Surface Soil Analytical Results

A total of 142 surface soil samples were collected at OCI during the Phase II investigation. See Figure V. Eight samples were collected at monitoring well locations; 33 samples were collected at soil boring locations; and 101 samples were collected at surface soil locations. The samples were analyzed for VOCs, SVOCs, pesticides, PCBs, metals, and cyanide. Table 4-13 in the Phase II RI presents the organic and inorganic compounds detected in surface soil samples.

F.1 VOCs

Three surface soil samples (SS-96, SS-104, and SS-107) had the highest concentrations of total VOCs (greater than 10,000 $\mu\text{g/kg}$). Soil at these locations contained elevated levels of xylene (25,000, 73,000, and 360 $\mu\text{g/kg}$, respectively), toluene (6500, 74,000, 170 $\mu\text{g/kg}$, respectively) and tetrachloroethene (1,400, 4,700, and 3,000 $\mu\text{g/kg}$, respectively). In addition, SS-96 and SS-104 had high concentrations of ethylbenzene (1300 and 25,000 $\mu\text{g/kg}$, respectively), and SS-107 had a high concentration of 1,2-dichloroethene (13,000 $\mu\text{g/kg}$). Both SS-104 and SS-107 are located in former tanker loading areas and are on or adjacent to the main driveway of the Site. SS-96 is situated in the northeastern corner of the former lacquer thinner spill area, immediately south of the northern tank farm. SS-96 and SS-107 were the only two surface soil samples that had VOC TICs greater than 10,000 (12,250 and 12,640 $\mu\text{g/kg}$, respectively); all other surface soil VOC TICs ranged from 0-6000 $\mu\text{g/kg}$.

F.2 SVOCs

SS-51, SS-95, and SS-105 contained the highest levels of total SVOCs (greater than 100,000 $\mu\text{g/kg}$). The compound containing the highest concentration at all three locations was bis(2-Ethylhexyl) phthalate (66,000, 220,000, and 150,000 $\mu\text{g/kg}$, respectively). SS-95 and SS-105 are located within the former lacquer thinner spill area, and SS-51 is located on the Site, just outside of the staging area. SS-51 is situated on level ground at the bottom of a hill from the OCI buildings. Because of the elevated concentrations at SS-58, SS-59, and SS-60, which are near SS-51, it is believed this level ground is affected by surface runoff.

In addition to the three locations mentioned above, 23 out of the 52 sample locations within the Site fenced area contained high levels of total SVOCs (greater than 10,000 $\mu\text{g/kg}$). These high concentration surface soil locations are in areas associated with considerable Site activity or with surface runoff from high Site activity locations (e.g. the depression that runs

along the western edge of OCI and the low ground north of the boiler house and aeration basin).

Nine surface soil samples contained SVOC TIC concentrations greater than 1,000,000 $\mu\text{g/kg}$; seven of these are located within the Site fenced area (SS-51, SS-58, SS-68, SS-69, SS-93, SS-95, and SS-97). Their concentrations range from 1,303,800 to 3,269,100 $\mu\text{g/kg}$. SS-110 is located east of the Site along the railroad siding and has an SVOC TIC concentration of 1,656,400 $\mu\text{g/kg}$. SS-30 was located on the hill adjacent to PCA rail siding and has an SVOC TIC concentration of 2,430,300 $\mu\text{g/kg}$. Twelve surface soil samples contained greater than 100,000 $\mu\text{g/kg}$ SVOC TICs; 11 of these samples were taken in the areas of high activity in the Site fenced area. The twelfth surface soil sample (SS-98) was located along the railroad siding east of the Site.

F.3 Pesticides/PCBs

Surface soil pesticide levels outside of the Site were less than 140 $\mu\text{g/kg}$. Within the fenced area, pesticide levels ranged from 0-6616 $\mu\text{g/kg}$. The five highest pesticide concentrations were detected at SS-68 (1,163.4 $\mu\text{g/kg}$), SS-84 (1,113.1 $\mu\text{g/kg}$), SS-93 (2,232.5 $\mu\text{g/kg}$), SS-97 (6,616.1 $\mu\text{g/kg}$), and SS-103 (4,275 $\mu\text{g/kg}$).

PCBs in the surface soil samples were found predominantly within the Site. Concentrations in this area ranged from 43 to 74,000 $\mu\text{g/kg}$, with the seven highest concentrations located at SS-60 (17,000 $\mu\text{g/kg}$), SS-61 (30,490 $\mu\text{g/kg}$), SS-81 (74,000 $\mu\text{g/kg}$), SS-86 (14,000 $\mu\text{g/kg}$), SS-93 (32,000 $\mu\text{g/kg}$), SS-103 (45,000 $\mu\text{g/kg}$), and SS-104 (13,000 $\mu\text{g/kg}$). In general, samples outside of the OCI Site contained low PCB concentrations (<100 $\mu\text{g/kg}$). The one exception is SB-22 (345 $\mu\text{g/kg}$), which is located approximately 1,500 feet northwest of the Site.

F.4 Metals and Cyanide.

Inorganic elements were detected at varying degrees at all locations. The highest surface soil inorganic contamination encountered occurred at the Site during the Phase II investigation, and in particular, at the former lacquer thinner spill area.

The highest concentrations of inorganic analytes were found at the former lacquer spill area. In this area, four analytes were found to be significantly higher than background concentrations: cadmium, chromium, cyanide, and lead. Cadmium was found in excess of 50 times the background level of 0.21 $\mu\text{g/kg}$ at SS-31 (33.6 mg/kg), SS-32 (41.4 mg/kg), SS-33 (35.7 mg/kg), SS-40 (44.8 mg/kg), and SS-96 (11.9 mg/kg), and greater than five times background at SS-45 (2.2 mg/kg). Chromium was found in excess of 50 times the background level of 19.84 mg/kg at SS-31 (1490 mg/kg), SS-32 (1590 mg/kg), SS-33 (1540 mg/kg), and SS-105 (1180 mg/kg), and greater than five times background at SS-40 (629 mg/kg) and SS-95 (835 mg/kg). Cyanide was found in excess of 50 times the background level of 0.33 mg/kg at locations SS-31 (113 mg/kg), SS-32 (136 mg/kg), SS-33 (120 mg/kg),

and SS-105 (95.8 mg/kg). Lead was found in excess of 500 times the background level of 13.99 mg/kg at SS-31 (13,100 mg/kg), SS-32 (10,600 mg/kg), and SS-105 (8460 mg/kg).

G. Additional Studies

The following additional studies were performed to supplement the data obtained during the Phase II RI:

- Cone Penetrometer Study
- Dense Non-Aqueous Phase Liquid (DNAPL) Investigation
- Phase II RI Non-Aqueous Phase Liquid (NAPL) and Headspace Results

G.1 Cone Penetrometer Study

The EPA tasked the U.S. Army Corps of Engineers (USACE), Earthquake Engineering and Geosciences Division, Waterways Experiment Station, to perform an investigation at OCI "to evaluate and demonstrate the ability of the Site Characterization and Analysis Penetrometer System at the Site." Appendix M presents the USACE investigation report; the following paragraphs summarize the report.

The investigation was conducted in July 1992. 49 cone penetrometer penetrations were completed along a 300 x 300 foot grid. The USACE estimated that petroleum contamination greater than 100 ppm total recoverable petroleum hydrocarbons was present in two distinct plumes, as presented in Figure 16. The first plume extended from the Site property, west approximately 800 feet, and north approximately 2,000 feet. The second plume extended approximately 400 feet radially from the sludge waste pit. The sludge waste pit is approximately 2,500 feet north of the Site. The report indicates the easterly extent of the first plume was not defined conclusively during the cone penetrometer investigation; the first plume likely extends further east than is shown in Figure 16.

G.2 DNAPL Investigation

Six DNAPL wells were located and constructed at OCI. See Figure 17. No DNAPL has been detected in these wells to date. Although not conclusive, it appears that DNAPL is not present at OCI.

G.3 Phase II RI NAPL and Headspace Study

During the drilling of Phase II RI soil borings, headspace analyses and non-aqueous phase liquid (NAPL) shake tests were performed at two-foot intervals for each boring. The headspace test was performed by placing approximately 100 ml of soil into a 250 ml glass jar. The glass jar was covered with aluminum foil, sealed, and set aside for 5 to 10 minutes. After the prescribed period of time, the lid of the jar was opened, the aluminum foil was

punctured simultaneously with the tips of a photoionization detector and a flame-ionization detector, and the instrument readings were recorded.

The NAPL shake test was performed in a manner similar to that described in Cohen, et al. (1992). Approximately 100 ml of soil was placed in a 250-ml glass jar, containing approximately 50 ml of distilled water and 1 gram of SUDAN IV (a hydrophobic dye). After sealing the jar, the mixture was shaken vigorously and inspected for changes. If NAPL was present in the soil sample, then the dye would dissolve within the NAPL and appear bright red. If no NAPL was present in the sample, then the dye would not dissolve into the solution, and no color change would occur. Appendix F of the Phase II RI presents the head space and NAPL test results.

Headspace readings, using an FID, were observed to be greater than 1,000 ppm at the following locations: SB-12, SB-25, SB-26, SB-29, SB-30, SB-32, SB-35, SB-41, SB-43, MW-35, MW-38, D-4, and D-6. Eleven soil and liquid sample locations indicated the presence of NAPL: SB-12, SB-14, SB-25, SB-26, SB-30, SB-42, SB-44, D-2, D-3, MW-33, and MW-38. These locations correspond to those associated with OCI operations, former oil refinery operations, or waste disposal sites from the former oil refinery.

H. Contaminant Fate and Transport

This section describes the fate and transport of the constituents detected at Organic Chemicals, Inc. (OCI), based on Site history, knowledge of surface and subsurface media gained during the Phase I and II remedial investigation (RI) field investigations, and analytical results. The purpose of this section is to evaluate qualitatively potential pathways of contaminant migration, as well as to describe the environmental behavior of Site contaminants.

This section is divided into two parts: potential migration routes and contaminant persistence and migration. Potential migration routes will be evaluated to determine routes that could transmit contaminants to receptors. Contaminants associated with pertinent migration routes will be evaluated based on their persistence in the environment and factors affecting contaminant migration.

H.1 Potential Routes of Migration

This section discusses the following potential routes or pathways of contaminant migration: air, surface water, soil exposure, and groundwater.

H.1.a Air Pathway

The release of hazardous substances to the air appears to be a minor potential contaminant migration route because no work activities are performed onsite and the onsite water treatment facility is no longer in operation. There are neither open pits nor industrial

operations which emit fugitive dust at OCI. No other sources of contaminant transport to the air pathway exist on the Site; therefore, the air pathway for contaminant transport is considered insignificant.

H.1.b Surface Water Pathway

The release of hazardous substances to surface water appears to be a minor potential contaminant migration route. A small intermittent ditch, Roy's Creek, runs from the quarry, southeast of the Site, 1,250 feet northwest to a point west of the Wyoming publicly-owned treatment works (POTW), and north of Packaging Corporation of America. Roy's Creek then runs west for approximately 1,000 feet before turning north for 2,500 feet, where it discharges into the Grand River.

Based on the contaminant plumes presented in Figures 12 and 14, Roy's Creek does not appear to be a discharge point of groundwater contaminated above 100 $\mu\text{g/L}$. The nearest monitoring wells upgradient from the intermittent creek, MW-11 and MW-29, had the following groundwater total VOC analytical results: Round 1: 400 and 8 $\mu\text{g/L}$, and Round 2: 0 and 0 $\mu\text{g/L}$, respectively. The 400 $\mu\text{g/L}$ result for MW-11 during round 1 sampling was attributed primarily to chloromethane (i.e., 390 $\mu\text{g/L}$). This contaminant was not detected at MW-11 during the second round of Phase II sampling or the first or second rounds of Phase I sampling. Therefore, contaminant transport by the surface water pathway was considered insignificant. However, without the collection of surface water or sediment analytical data, and a subsequent risk analysis on that data, this pathway cannot be completely ruled out.

H.1.c Soil Exposure Pathway

The release of hazardous substances through exposure to Site soils appears to be a potential contaminant migration route. Evaluation of the surface soil data determined that high levels of carcinogenic polynuclear aromatic hydrocarbons (PAHs), lead, polychlorinated biphenyls (PCBs), and dioxin/furans were present at the OCI Site. These contaminants may cause undue risk to trespassers and future onsite workers.

H.1.d Groundwater Pathway

The release of hazardous substances through exposure to lower groundwater system (LGS) groundwater may be a potential contaminant migration route. Levels of chlorinated hydrocarbons and petroleum products are present in the upper groundwater system (UGS), and to a much lesser extent, in the LGS. The UGS groundwater pathway is currently being addressed by the existing groundwater treatment system. Private wells located near the Site are screened in the LGS, specifically the Marshall Formation (i.e., sandstone).

H.2 Contaminant Persistence and Migration

The contaminants associated with the soil exposure and groundwater migration pathways were evaluated based on their persistence in the environment and factors affecting contaminant migration. Table 3 presents physical and chemical constants associated with these contaminants [e.g., aqueous solubility, vapor pressure, Henry's law constant, organic carbon partition coefficient (K_{oc}), octanol-water partition coefficient (K_{ow}) and density].

The aqueous solubility represents the maximum concentration of a compound that will dissolve in water at ambient temperature and pressure. Vapor pressure is the pressure exerted by a chemical vapor in equilibrium with its solid or liquid form at a given temperature. Henry's law constant provides a measure of the extent of chemical partitioning between air and water at equilibrium. The organic carbon partition coefficient, K_{oc} , is a measure of the tendency for organic compounds to adsorb to soil or sediment. The octanol-water partition coefficient, K_{ow} , is an indicator of hydrophobicity or the tendency of a compound to avoid the aqueous phase. Density is the mass of a compound divided by its volume.

H.2.a Soil Exposure Pathway

The contaminants associated with the soil exposure pathway are carcinogenic PAHs, lead, PCBs, and dioxin/furans. Based on the data presented in Table , these compounds would tend to adsorb to soil particles because of their high K_{oc} and tend not to transfer to water- or air-phases because of their low water solubilities and vapor pressures. Because lead can be found in numerous forms, each having its own unique physical characteristics, data for lead was not presented in Table 3. A determination of the species of lead was not performed as a part of either the Phase I or Phase II RIs; therefore, this subsection does not discuss lead migration.

H.2.b Groundwater Exposure Pathway

Contaminants associated with the groundwater exposure pathway are chlorinated hydrocarbons, aromatics, and PAHs. Because of the differences in physical characteristics of these contaminants, this subsection discusses chlorinated hydrocarbons and aromatics separately from PAHs.

Water solubility and K_{ow} are important physical characteristics that affect contaminant transport in groundwater. Based on the data presented in Table 3, chlorinated hydrocarbons and aromatics generally have moderate water solubilities (greater than 10,000 mg/L) and low K_{ow} values (less than 100); therefore, chlorinated hydrocarbons and aromatics would tend to be susceptible to the groundwater transport pathway.

Based on the data presented in Table 3, PAHs generally have low water solubilities (less than 1 mg/L) and moderate to high K_{ow} values; therefore, PAHs would tend not to be susceptible to the groundwater transport pathway.

VI. Summary of Site Risks

The following groundwater exposure scenario was evaluated quantitatively in the FFS: a future ingestion of drinking water for adults only and potential for current ingestion of drinking water from the private wells. Due to the limited scope of the FFS and the unlikelihood of future residential land use, only one exposure pathway was chosen to evaluate potential future adverse health risks associated with exposure to contaminated groundwater. This scenario assumes that contaminated ground water will migrate to the LGS where it would be a potable water source.

A quantitative assessment of baseline risk for human health at OCI, evaluates potential exposures and subsequent risks for current trespassers and future occupants of OCI. This assessment addressed risks associated with exposure to chemicals present in soils at the Site, as well as the area of investigation (AOI). For the risk assessment, the AOI was defined as that area at OCI excluding both the Site and the area near the petroleum sludge lagoon (i.e., the area represented by soil samples collected from the following locations: SB-12, SB-14, MW-16, MW-32, and MW-33).

A. Toxicity Assessment Summary

Cancer potency factors (CPFs) have been developed by EPA's Carcinogenic Assessment Group for estimating excess lifetime cancer risks associated with exposure to potentially carcinogenic chemicals. CPFs, which are expressed in units of $(\text{mg/kg-day})^{-1}$, are multiplied by the estimated intake of a potential carcinogen, in mg/kg-day , to provide an upper-bound estimate of the excess lifetime cancer risk associated with exposure at that intake level. The term "upper bound" reflects the conservative estimate of the risks calculated from the CPF. Use of this approach makes underestimation of the actual cancer risk highly unlikely. Cancer potency factors are derived from the results of human epidemiological studies or chronic animal bioassays to which animal-to-human extrapolation and uncertainty factors have been applied.

Reference doses (RfDs) have been developed by EPA for indicating the potential for adverse health effects from exposure to chemicals exhibiting noncarcinogenic effects. RfDs, which are expressed in units of mg/kg-day , are estimates of lifetime daily exposure levels for humans, including sensitive individuals. Estimated intakes of chemicals from environmental media (e.g., the amount of a chemical ingested from contaminated drinking water) can be compared to the RfD. RfDs are derived from human epidemiological studies or animal studies to which uncertainty factors have been applied (e.g., to account for the use of animal data to predict effects on humans). These uncertainty factors assure that the RfDs will not underestimate the potential for adverse non carcinogenic effects to occur. Table 6-7 gives RfDs and slope factors.

Excess lifetime cancer risks are determined by multiplying the intake level with the cancer potency factor. These risks are probabilities that are generally expressed in scientific notation (e.g., 1×10^{-6} or $1 \text{E-}6$). An excess lifetime cancer risk of 1×10^{-6} indicates that, as a plausible upper bound, an individual has a one in a million chance of developing cancer as a result of Site-related exposure to a carcinogen over a 70-year lifetime under the specific conditions at a site.

Potential concern for noncarcinogenic effects of a single contaminant in a single medium is expressed as the hazard quotient (HQ) (or the ratio of the estimated intake derived from the contaminant concentration in a given medium to the contaminants reference dose). By adding the HQs for all contaminants within a medium or across all media to which a given population may reasonably be exposed, the Hazard Index (HI) can be generated. The HI provides a useful reference point for gauging the potential significance of multiple contaminant exposures within a single media or across media.

Excess cancer risk estimates were calculated for exposures to carcinogenic indicator chemicals by adding together the product of the chronic daily intakes (CDI) and cancer potency factor for all carcinogenic indicator chemicals and intake routes for a given human receptor. Hazard indices were calculated for exposures to non-carcinogenic indicator chemicals by summing the ratios of CDIs to acceptable daily intakes (reference doses) for all chemicals and intake routes for a given human receptor.

B. Risk Summary

B.1 Carcinogenic Risk

The future exposure scenario included residential groundwater use. Only exposure to groundwater was assessed under the future residential scenario. A chronic hazard index of 17.6 was estimated for potential future residential use of groundwater. This indicated a potential noncarcinogenic health risk for this hypothetical scenario. Trichloroethene in groundwater accounted for approximately 79 percent of this noncarcinogenic risk. Both toluene and N-nitrosodiphenylamine accounted for approximately 11 percent of the risk.

Excess cancer risk for potential future residential groundwater use was estimated at 3×10^{-3} . Vinyl chloride (8×10^{-4}), trichloroethene (8×10^{-4}), 1,1-dichloroethene (3×10^{-4}), and arsenic (3×10^{-4}) accounted for the majority of this excess cancer risk.

The above risk assessment was performed in the FFS. No risk assessment was performed in the Phase II RI for the shallow aquifer because the interim ROD concluded that the groundwater may pose an imminent and substantial endangerment to public health, welfare or the environment. Implementation of the interim ROD selected remedy has begun to stop further migration of the contaminant plume, achieving significant risk reduction while a final solution was developed.

The Site current trespasser scenario yielded an excess lifetime cancer risk of 2×10^{-4} . Risk is due to exposure to the following compounds: benzo(a)pyrene, dibenzo(a,h)anthracene, 2,3,7,8-tetrachlorodibenzodioxin (2,3,7,8-TCDD) (on a total equivalent basis), and PCB (Aroclor 1248). The Site future worker scenario yielded an excess lifetime cancer risk of 3×10^{-4} . Risk is due largely to exposure to the following compounds: benzo(a)pyrene, beryllium, bis(2-ethylhexyl)phthalate, chromium(VI), dieldrin, 2,3,7,8-TCDD (on a total equivalent basis), and PCB (Aroclor 1248). In both the Site current and future scenarios, risk was found to exceed the acceptable range of 10^{-6} to 10^{-4} .

The excess lifetime cancer risk for the Area of Investigation (AOI), MW-41, and MW-42 future residential exposure scenarios was evaluated. The excess lifetime cancer risk for these scenarios was, 5×10^{-5} , 1×10^{-4} , and 2×10^{-5} , respectively. Only the MW-41 scenario was outside of the acceptable range of carcinogenic risk. Arsenic was responsible for the excess risk in this scenario equal to 1×10^{-4} .

B.2 Non-carcinogenic Risk

The Site current trespasser HI and the Site future worker were 0.2, and 0.8 respectively, these risk numbers are below the level for increased concern of non-carcinogenic effects. The HI for the AOI future resident was 0.7, this risk is below the level for increased concern of non-carcinogenic effects. The HIs for the MW-41 and MW-42 scenarios (the two Marshall sandstone well scenarios) were 2 and 0.4, respectively. The HI in MW-41 is due largely to the manganese and arsenic water concentrations.

B.3 Qualitative Ecological Risk Assessment Results (QERA)

A HI less than 1.0 indicates the ecological chemicals of potential concern are below levels of ecological concern. The hazard indices for the open water wetland, the forested wetland, the scrub-shrub wetland, and the old field terrestrial habitats were 0.07, 0.14, 0.17, and 0.17, respectively. Therefore, habitats and species at OCI do not appear to be subjected to significant ecological risk from OCI contamination. Figure 18 shows the sample locations used to determine the HI. Tables 5 and 6 show the intake values used to calculate the HIs.

B.4 Assessment of Human Health and Environmental Risks Presented by the Site

Actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response actions selected in this ROD, may present an imminent and substantial endangerment to public health, welfare, or, the environment.

VII. Description of Alternatives

Two alternatives were developed for the final groundwater action and nine were developed for the final source action. The alternatives developed for these actions are:

- Alternative 1: No Action
- Alternative 2: Institutional Controls

All of the following alternatives include the groundwater final alternative which consists of continued operation of the existing groundwater system and will be referred to as Alternative 10.

- Alternative 3: Contaminated Soil Containment by Concrete Capping and Surface Controls
- Alternative 4: Offsite Disposal of Contaminated Soil
- Alternative 5: Onsite Ex Situ Treatment of Contaminated Soil by Soil Washing
- Alternative 6: Onsite Ex Situ Treatment of Contaminated Soil by Solidification/Stabilization
- Alternative 7: Treatment of Organic-Contaminated Soil by Onsite Thermal Treatment and Containment of Residual and Inorganic-Contaminated Soil by Capping
- Alternative 8: Treatment of Organic-Contaminated Soil by Onsite Thermal Treatment and Landfill Disposal of Residual and Inorganic-Contaminated Soil
- Alternative 9: Treatment of Organic-Contaminated Soil by Onsite Thermal Treatment and Treatment of Residual and Inorganic-Contaminated Soil by Solidification/Stabilization
- Alternative 10: Continued Operation and Maintenance of the Existing Granular Activated Carbon Groundwater Treatment System

A. Alternative 1: No Action

Alternative 1 is the no action alternative, required by the National Contingency Plan and Superfund Amendments and Reauthorization Act regulations. This alternative serves as a baseline for comparison with other alternatives for the soil and groundwater alternatives.

The capital and present worth cost for this alternative is \$0.

B. Alternative 2: Institutional Controls

Alternative 2 is a limited action alternative that includes implementation of institutional controls to prevent direct contact with or ingestion of contaminated soil. A 6-foot security fence with three strands of barbed wire would be installed in contaminated areas of the Site

not currently fenced to reduce the opportunity for exposure. This alternative would include addressing areas south of the staging area and along the abandoned railroad siding. Warning signs would be displayed on fences to alert the public of potential hazards. Future uses would also be limited by deed restrictions.

The capital cost and O&M cost for this alternative are \$47,569 and \$7,000 respectively. The present worth cost for this alternative is \$155,176.

C. Alternative 3: Contaminated Soil Containment by Concrete Capping and Surface Controls

Alternative 3 involves capping contaminated soil areas with concrete. The concrete cap was selected as representative of forms of containment that reduce potential contact with contaminated soils and surface water infiltration into groundwater of de minimis volatile organic soil contaminants that are major groundwater contaminants. The major soil contaminants of concern at the Site are not expected to leach to groundwater. Drainage controls would be provided to control surface water runoff. A 6-foot security fence with three strands of barbed wire would be installed in contaminated Site areas not currently fenced, as described in Alternative 2. Deed restrictions would be placed on the Site to limit future land use (i.e., subsurface excavations below the concrete cap). For cost estimating purposes, it is assumed a pre-design investigation will be performed to confirm the extent of soil contamination.

The capital cost and O&M cost for this alternative are \$2,137,691, and \$12,000 respectively. The present worth cost for this alternative is \$2,322,161

D. Alternative 4: Offsite Disposal of Contaminated Soil

Alternative 4 includes excavation, removal and transportation of contaminated soil from the OCI Site to an approved landfill. Appendix B in the Phase II RI shows 5,561 cubic yards of soil must be disposed of at a Resource Conservation and Recovery Act (RCRA) Part B-permitted landfill and 22 cubic yards at a Toxic Substances Control Act (TSCA) permitted landfill. An additional 457 cubic yards of soil may be disposed of at a local solid waste landfill. The total estimated soil to be remediated is 6040 cubic yards. See Figure 19. Following excavation and disposal of contaminated soil, the OCI Site will be backfilled with clean soil and revegetated. Following disposal of contaminated soil, the Site would be considered safe for industrial use. Fence restrictions will be required because groundwater remediation will be operating long after the soil cleanup is complete. For cost estimating purposes, it is assumed that a pre-design investigation will be performed to confirm the extent of soil contamination. In addition, it is assumed the offsite disposal facility will require analytical testing to be performed at a consistent rate (i.e., one test per 100 cubic yards) during the offsite transfer of contaminated soil.

The capital cost and O&M cost for this alternative are \$2,363,032, and \$7,000 respectively. The present worth cost for this alternative is \$2,470,640.

E. Alternative 5: Onsite Ex Situ Treatment of Contaminated Soil by Soil Washing

Alternative 5 includes excavation and onsite treatment by soil washing. Excavated contaminated soil will be placed in waste piles with an impermeable base and cover. Contaminated soil is screened to remove coarse rock and debris. For cost estimating purposes, it is assumed 1 percent of the total volume of soil to be treated will consist of cobbles and other large debris, too large to be accepted into the treatment unit. These materials will be disposed of offsite as solid waste.

Chemical additives, such as surfactants, acids, bases, and chelants, are added to the soil to produce a slurry feed, which flows to an attrition scrubbing machine. Mechanical and fluid shear stresses are applied to the slurry feed through the use of screens, separators, and cyclones. After these steps, the following output streams are created: coarse clean fraction, contaminated fine fraction, and contaminated process water.

Soil monitoring will be implemented to confirm the treatment process reduced contaminant levels below cleanup goals. The coarse clean fraction is expected to be used as backfill. All excavated areas will have a vegetative cover. The contaminated fine fraction, assumed to be 10 percent of treated volume, will require disposal in a RCRA-permitted landfill. For cost estimating purposes, it is assumed 10 percent of the treated soil volume will fail to meet cleanup goals and be disposed of offsite as solid waste. Contaminated process water would be treated and returned to the plant for re-use.

Following disposal of contaminated soil, the Site would be considered safe for industrial use. Fence restrictions will be required because groundwater remediation will be operating long after the soil cleanup is complete. Before implementation of this alternative, it is assumed a treatability study would be required to determine the necessary chemical additives to treat the soil to below cleanup goals. For cost estimating purposes, it is assumed a pre-design investigation will be performed to confirm the extent of soil contamination. In addition, it is assumed the offsite disposal facility will require analytical testing to be performed at a consistent rate (i.e., one test per 100 cubic yards) during the offsite transfer of contaminated soil.

The capital cost and O&M cost for this alternative are \$2,270,401, and \$7,000 respectively. The present worth cost for this alternative is \$2,378,009.

F. Alternative 6: Onsite Ex Situ Treatment of Contaminated Soil by Solidification/Stabilization

Alternative 6 includes excavation and onsite treatment of contaminated soil by solidification/stabilization and subsequent onsite disposal of stabilized soil. Excavated contaminated soil would be placed in waste piles with an impermeable base and cover. Contaminated soil is screened to remove coarse rock and debris and combined with pozzalanic ingredients (including fly ash and cement binding reagents) and water in a pug mill. For cost estimating purposes, it is assumed 1 percent of the total volume of soil to be treated will

consist of cobbles and other large debris, too large to be accepted into the treatment unit. These materials will be disposed of offsite as solid waste.

Wet slurry is returned to excavated areas to cure. Stabilized material would exhibit engineering characteristics similar to those of a low load bearing concrete mixture (i.e., 25-50 psi). It is estimated the net volumetric expansion of stabilized soil would be 25 percent. For cost estimating purposes, it is assumed 10 percent of treated soil will fail the Toxicity Characteristic Leaching Procedure (TCLP) and be disposed of offsite as RCRA hazardous waste.

Following treatment and curing of stabilized soil, a vegetative cover would be applied to the stabilized mass to protect future workers from dermal contact with treated soil. The Site would be considered safe for industrial use. Deed restrictions to limit future excavation of stabilized soils would be required. Fence restrictions will be required because groundwater remediation will be operating long after the soil cleanup is complete. Before treatment, a mix evaluation would be performed to determine the most effective mix ratio of soil, pozzalanic ingredients, and water.

For cost estimating purposes, it is assumed that a pre-design investigation will be performed to confirm the extent of soil contamination. In addition, it is assumed the offsite disposal facility will require analytical testing to be performed at a consistent rate (i.e., one test per 100 cubic yards) during the offsite transfer of contaminated soil.

The capital cost and O&M cost for this alternative are \$1,596,399, and \$7,000 respectively. The present worth cost for this alternative is \$1,704,007.

G. Alternative 7: Treatment of Organic-Contaminated Soil by Onsite Thermal Treatment and Containment of Residual and Inorganic-Contaminated Soil by Capping

Alternative 7 includes excavation and thermal treatment of contaminated soil followed by onsite containment of residual by capping. Before implementation of this alternative, soil would be segregated into three groups. Group 1 (Figure 20) soils contain organic contaminants above their respective cleanup goals. Group 2 (Figure 21) soils contain inorganic contaminants above their respective cleanup goals. Group 3 (Figure 22) soils contain both organic and inorganic contaminants above their respective cleanup goals. Group 1 and 3 soils would be thermally treated and contained. Group 2 soils would not be thermally treated, but would be contained. Estimated volumes of Group 1, 2, and 3 soils are 126; 1,306; and 4,609 cubic yards, respectively.

Excavated contaminated soil would be placed in waste piles with an impermeable base and cover. Contaminated soils to be thermally treated would be screened to remove coarse rock and debris. For cost estimating purposes, it is assumed 1 percent of the total volume of soil to be treated will consist of cobbles and other large debris, too large to be accepted into the treatment unit. These materials will be disposed of offsite as solid waste. Screened soil

would be fed into a mobile thermal treatment unit (including either fluidized bed, thermal desorption, or circulating bed technologies) to treat Group 1 and 3 soils. After thermal treatment, the residual (ash and soil) would be tested for contaminants to verify inorganic contamination and that residuals were below organic contaminant cleanup goals. Residuals above organic contaminant cleanup goals would be retreated.

For cost estimating purposes, it is assumed 10 percent of the treated soil would be disposed of offsite as RCRA hazardous waste. The remaining Group 1 and 3 soils would be placed in areas inside a security fence and contained along with Group 2 soils with a concrete cap. Drainage controls would be provided to control surface water runoff. Deed restrictions would be placed on the Site to limit future land use (i.e., subsurface excavations below the concrete cap). Before treatment, a trial burn would be performed to determine thermal treatment effectiveness.

For cost estimating purposes, it is assumed a pre-design investigation will be performed to confirm the extent of soil contamination. In addition, it is assumed the offsite disposal facility will require analytical testing to be performed at a consistent rate (i.e., one test per 100 cubic yards) during the offsite transfer of contaminated soil.

The capital cost and O&M cost for this alternative are \$8,786,474, and \$12,000 respectively. The present worth cost for this alternative is \$8,970,944.

H. Alternative 8: Treatment of Organic-Contaminated Soil by Onsite Thermal Treatment and Landfill Disposal of Residual and Inorganic-Contaminated Soil

Alternative 8 includes onsite thermal treatment of organic-contaminated soil and landfill disposal of the thermal treatment residual and inorganic-contaminated soil. Before implementation of this alternative, soil would be segregated into three groups, as discussed in Alternative 7. Excavated contaminated soil would be placed in waste piles with an impermeable base and cover. Contaminated soils to be thermally treated would be handled as described in Alternative 7. After thermal treatment, the inorganic contaminated residual (ash and soil) would be tested to verify inorganic contamination and that residuals were below organic contaminant cleanup goals. Residuals above organic contaminant cleanup goals would be retreated.

Residuals below organic and inorganic contaminant cleanup goals would be backfilled onsite. Residuals having inorganic concentrations above contaminant cleanup goals and Group 2 soils would be tested to determine whether they are RCRA hazardous. RCRA hazardous soils would be transported offsite to a RCRA Part B-permitted landfill. Non-RCRA hazardous soils would be transported offsite to a local solid waste landfill. Clean soil would be backfilled into excavated areas and revegetated to bring areas back to grade. Following treatment of contaminated soil, the Site would be considered safe for industrial use. Fence restrictions will be required because groundwater remediation will be operating long after the

soil cleanup is complete. Before treatment, a trial burn would be performed to determine thermal treatment effectiveness.

For cost estimating purposes, it is assumed a pre-design investigation will be performed to confirm the extent of soil contamination. In addition, it is assumed the offsite disposal facility will require analytical testing to be performed at a consistent rate (i.e., one test per 100 cubic yards) during the offsite transfer of contaminated soil.

The capital cost and O&M cost for this alternative are \$8,583,301, and \$7,000 respectively. The present worth cost for this alternative is \$8,690,907.

I. Alternative 9: Treatment of Organic-Contaminated Soil by Onsite Thermal Treatment and Treatment of Residual and Inorganic-Contaminated Soil by Solidification/Stabilization

Alternative 9 includes onsite thermal treatment of organic-contaminated soil and solidification/stabilization of the thermal treatment residual and inorganic-contaminated soil. Before implementation of this alternative, soil would be segregated into three groups, as discussed in Alternative 7. Excavated contaminated soil would be placed in waste piles with an impermeable base and cover. Contaminated soils to be thermally treated would be handled as described in Alternative 7. After thermal treatment, the inorganic contaminated residual (ash and soil) would be tested to verify inorganic contamination and that residuals were below organic contaminant cleanup goals. Residuals above organic contaminant cleanup goals would be retreated. Residuals below organic and inorganic contaminant cleanup goals would be backfilled onsite. Residuals having inorganic concentrations above contaminant cleanup goals and Group 2 soils would undergo a solidification/stabilization process as described in Alternative 6. Stabilized material would exhibit engineering characteristics similar to those of a low load bearing concrete mixture (i.e., 25-50 psi). It is estimated the net volumetric expansion of the stabilized soil would be 25 percent.

Following solidification/stabilization of contaminated soil, the stabilized mass would be analyzed for TCLP. For cost estimating purposes, it assumed 10 percent of the stabilized material fails TCLP and would be disposed of offsite as RCRA hazardous. A vegetative cover would be applied to the remaining stabilized material to protect future workers from dermal contact with treated soil. The Site would be considered safe for industrial use. Deed restrictions to limit future excavation of stabilized soils would be required. Fence restrictions will be required because groundwater remediation will be operating long after the soil cleanup is complete.

Before treatment, a mix evaluation would be performed to determine the most effective mix ratio of soil, pozzalanic ingredients, and water; a trial burn would be performed to determine the effectiveness of thermal treatment. For cost estimating purposes, it is assumed a pre-design investigation will be performed to confirm the extent of soil contamination. In addition, it is assumed the offsite disposal facility will require analytical testing to be

performed at a consistent rate (i.e., one test per 100 cubic yards) during the offsite transfer of contaminated soil.

The capital cost and O&M cost for this alternative are \$7,930,993, and \$7,000 respectively. The present worth cost for this alternative is \$8,038,601.

J. Alternative 10 - Operate and maintain a ground water extraction and treatment system to contain the contaminated plume within OCI property boundaries and prevent the migration of contaminants to sensitive receptors like the LGS. Groundwater is currently being extracted and treated by the granular activated carbon system to comply with NPDES discharge limitations with discharge to Roy's Creek.

A ground water extraction and treatment system will be operated until MCLs are achieved at the point of compliance. The point of compliance is throughout the contaminant plume. Enforceable land use restrictions or other institutional controls will be required for the Site to prevent unacceptable risk from exposures to hazardous substances in the groundwater. Exposure controls will remain in effect until MCLs and other pertinent Part 201 criteria are achieved throughout the contaminated plume. A monitoring plan that meets the substantive requirements of Part 201 of the Michigan Natural Resources and Environmental Protection Act, Act 451 of 1994, ("Part 201") will be developed and implemented to ensure the effectiveness of the remedial action.

An alternate point of compliance (APC) may be established by the EPA in consultation with the MDEQ if the likelihood of exposure to the aquifer is demonstrated to be remote, and enforceable land use restrictions or other institutional controls are in place to prevent unacceptable risk from exposures to hazardous substances in the groundwater. The APC must be protective of human health and the environment, as well as consistent with the NCP and all applicable or relevant and appropriate state requirements, including Part 201. If the EPA establishes an APC, continued operation of the groundwater extraction and treatment system is not required if MCLs are attained at or beyond the APC. However, the groundwater extraction and treatment system will remain in place and operational until MCLs are achieved throughout the contaminated plume. Also, exposure controls and the monitoring plan will remain in place until MCLs and other pertinent Part 201 criteria are attained throughout the contaminated plume.

The residual GAC from this treatment process will be properly treated in accordance with LDR requirements and disposed of off-site at a RCRA permitted landfill because it will contain listed hazardous wastes. If the residual GAC is regenerated it must be done in a RCRA permitted treatment unit which is in compliance with 40 CFR Part 264 Subpart X. The present worth, capital, and O&M costs are \$6,200,000, \$398,000, and \$400,000 respectively, assuming the system operates for thirty years. If the time frame is reduced as a result of compliance with the cleanup goals due to the implementation of institutional controls, the present worth cost would be reduced to \$2,000,000, and O&M cost would be \$120,000.

VII. Comparative Analysis of Alternatives

In order to determine the most appropriate alternative for the OCI Site, the alternatives were evaluated against each other. Comparisons were based on the nine evaluation criteria. The nine criteria are: 1) overall protection of human health and the environment, 2) compliance with applicable or relevant and appropriate requirements, 3) long-term effectiveness and permanence, 4) reduction of toxicity, mobility, and volume, through treatment, 5) short-term effectiveness, 6) implementability, 7) cost, 8) state acceptance, and 9) community acceptance.

A. Overall Protection of Human Health and the Environment

All of the remedial alternatives considered for the OCI Site are protective of human health and the environment by eliminating, reducing, or controlling risks at the OCI Site with the exception of the no action and institutional control alternative. As the no action and institutional control alternatives do not provide protection of human health and the environment, they are not eligible for selection and shall not be discussed further. Alternatives 3 through 10 would be protective of human health and the environment by eliminating the direct contact exposure pathway (i.e., capping), or by removing contaminated soils from the Site (i.e., landfill disposal), or by immobilizing hazardous constituents in a stabilized matrix (i.e., solidification/stabilization), or by removing or destroying hazardous constituents in the soils (i.e., soil washing and thermal treatment) and by eliminating ingestion of contaminated groundwater.

B. Compliance With ARARs

Each alternative is evaluated for compliance with ARARS, including chemical specific, action specific, and location specific ARARS. Alternatives 4, 5, 6, 8, 9, and 10 would comply with identified federal and state ARARS. Alternatives 3 and 7 may not comply with the EPA land ban requirements because they do not include treatment of all hazardous constituents.

C. Long-Term Effectiveness and Permanence

This evaluation focuses on the results of a remedial action in terms of the risks remaining at the Site after response objectives have been met. The following factors are addressed for each alternative: magnitude of remaining risk, adequacy and reliability of controls.

Alternative 3 would minimize long-term exposure by covering contaminated soil with a concrete cap and through application of deed restrictions. Alternatives 4 through 9 would require excavation and soil removal; thereby, eliminating human exposures and migration of hazardous constituents. Alternative 10 should pose no risk because contaminated water will either be treated to MCLs or due to institutional controls will not allow exposure to residents.

Continued monitoring of the aquifer will preclude contamination reaching a drinking water source. Therefore, the primary remedy and the contingency measures provide overall protection of human health and the environment, either by reducing contaminants to MCLs, or through institutional controls.

D. Reduction of Toxicity, Mobility, or Volume (TMV) Through Treatment

This evaluation addresses the statutory preference for selecting remedial actions that employ treatment technologies which permanently and significantly reduce toxicity, mobility, or volume of the hazardous substances. This preference is satisfied when treatment is used to reduce the principal threats at a Site through destruction of toxic contaminants, irreversible reduction of contaminant mobility, or reduction of total volume of contaminated media.

In Alternatives 3 and 4, no reduction of toxicity, mobility and volume through onsite treatment would be experienced.

In Alternatives 5 through 9, approximately 6,041 cubic yards of contaminated soil would be excavated and treated in either a soil washing, solidification/ stabilization or thermal treatment unit. Alternatives 5 through 9 would provide greater reduction in volume, mobility, and toxicity through treatment of Site contaminants than Alternatives 1 through 4. Alternatives 5 through 9 achieve the Superfund Amendments and Reauthorization Act preferred treatment to reduce the toxicity, mobility, and volume for hazardous substances.

The toxicity, mobility, and volume of the contaminated material will not be reduced by Alternative 10 by treatment if the residual carbon is land disposed because the contaminants will only be transferred to the residual carbon. If the residual carbon is regenerated, which will likely be more cost-effective, then the toxicity, mobility, and volume of the contaminated material will be reduced by treatment.

E. Short-Term Effectiveness

This evaluation focuses on the effects to human health and the environment which may occur while the alternative is being implemented and until the remedial objectives are met. The following factors were used to evaluate the short term effectiveness of each alternative: protection of the community during remedial actions, protection of workers during remedial actions, environmental impacts from implementation of alternatives, and time until remedial objectives are met.

Alternatives 3 through 9 would create short-term impacts comparable to one another, including the release of dust and air pollutants during excavation of contaminated soils, increased noise levels, and increased traffic around the Site. Use of engineering controls would limit air emissions. Alternatives 4 through 9 require offsite disposal; however, Alternatives 4 and 8 create more potential for release of contaminants during transportation because most soils will be transported to an offsite disposal facility.

With regard to Alternative 10 there are no construction impacts because construction is complete. With regard to the time until remedial objectives are met, Alternative 10 will be operated until the final remedial objective is met, which could take one to eleven years depending on the point of compliance.

None of these alternatives will result in unacceptable short-term risks to workers, residents, or the environment.

F. Implementability

This evaluation addresses the technical and administrative feasibility of implementing the alternatives and the availability of the various services and materials required during its implementation.

Technical and administrative requirements for implementing Alternatives 3 and 4 would be moderate. Technical and administrative requirements for implementing Alternatives 5 and 6 would be moderate to high. Technical and administrative requirements for implementing Alternatives 7 through 9 would be high.

Alternatives 4 through 9 would each have to comply with administrative requirements regarding transport of hazardous waste, as set by the U.S. Department of Transportation. Alternatives 7 through 9 would have to comply with strict substantive air permit requirements for thermal treatment. Alternative 10 poses no problems because it is already constructed.

G. Cost

This evaluation examines the estimated costs for implementing the remedial alternatives. Capital and O&M cost are used to calculate estimated present worth costs for each alternative. Capital costs range from a low of \$48,000 for Alternative 2 (institutional controls) to a high of \$9 million for Alternative 7 (thermal treatment and capping). Alternatives 4, 5, 6, 8, and 9 have a vegetative cover; therefore, the present worth O&M costs over a 30 year period are only approximately \$0.1 million. However, for Alternatives 3 and 7, which have a concrete cap, estimated present O&M costs are \$0.2 million, because long-term monitoring and maintenance would be required. The present worth cost of Alternative 6 is the lowest of the alternatives that eliminated the principle threat. The present worth for Alternatives 7, 8, and 9 (thermal treatment) are about 3 times the present worth for capping, offsite disposal, soil washing, and stabilization.

The capital cost for alternative 10 was \$398,000 and the total present worth cost could be as high as \$6,200,000 depending on monitoring frequency and length of operation.

H. State Acceptance

The State of Michigan concurs with EPA's selection of alternatives 6 and 10 for the final actions at the OCI Site.

I. Community Acceptance

Community response to the alternatives is presented in the responsiveness summary, which addresses comments received during the public comment period.

IX. The Selected Remedy

After considering the requirements of CERCLA, the detailed analysis of alternatives, and public comments, EPA has selected Alternatives 6 and 10 for the final actions at OCI:

Alternative 6 - Alternative 6 includes excavation and onsite treatment of contaminated soil by solidification/stabilization and subsequent onsite disposal of stabilized soil. Excavated contaminated soil would be placed in waste piles with an impermeable base and cover. Contaminated soil is screened to remove coarse rock and debris and combined with pozzalanic ingredients (including fly ash and cement binding reagents) and water in a pug mill. For cost estimating purposes, it is assumed 1 percent of the total volume of soil to be treated will consist of cobbles and other large debris, too large to be accepted into the treatment unit. These materials will be disposed of offsite as solid waste.

Wet slurry is returned to excavated areas to cure. Stabilized material would exhibit engineering characteristics similar to those of a low load bearing concrete mixture (i.e., 25-50 psi). It is estimated the net volumetric expansion of stabilized soil would be 25 percent. For cost estimating purposes, it is assumed 10 percent of treated soil will fail the Toxicity Characteristic Leaching Procedure (TCLP) and be disposed of offsite as RCRA hazardous waste.

The present worth, capital, and O&M costs for the selected remedy are \$1,704,007, \$1,596,399, and \$7,000 respectively.

The basis for the remediation goals is to protect future Site workers to a 1×10^{-4} excess cancer risk. Table 7 provides the cleanup goals for this risk level.

Alternative 10 - Operate and maintain a ground water extraction and treatment system to contain the contaminated plume within OCI property boundaries and prevent the migration of contaminants to sensitive receptors like the LGS. Groundwater is currently being extracted and treated to comply with NPDES discharge limitations.

A ground water extraction and treatment system will be operated until MCLs are achieved at the point of compliance. The point of compliance is throughout the contaminant plume. A

monitoring plan that meets the substantive requirements of Part 201 will be developed to ensure the effectiveness of the remedial action. Enforceable land use restrictions or other institutional controls will be required for the Site to prevent unacceptable risk from exposures to hazardous substances in the groundwater. Exposure controls will remain in effect until MCLs and other pertinent Part 201 criteria are achieved throughout the contaminated plume. A monitoring plan that meets the substantive requirements of Part 201 will be developed and implemented to ensure the effectiveness of the remedial action.

An APC may be established by the EPA in consultation with the MDEQ if the likelihood of exposure to the aquifer is demonstrated to be remote, and enforceable land use restrictions or other institutional controls are in place to prevent unacceptable risk from exposures to hazardous substances in the groundwater. The APC must be protective of human health and the environment, as well as consistent with the NCP and all applicable or relevant and appropriate state requirements, including Part 201. If the EPA establishes an APC, continued operation of the groundwater extraction and treatment system is not required if MCLs are attained at or beyond the APC. However, the groundwater extraction and treatment system will remain in place and operational until MCLs are achieved throughout the contaminated plume. Also, institutional controls and the monitoring plan will remain in place until MCLs and other pertinent Part 201 criteria are attained throughout the contaminated plume.

The total costs of the remedy with and without implementation of institutional controls associated with the APC are: present worth, \$3,704,007 and \$9,904,007, capital costs, \$398,000, and O&M costs \$127,000, and \$407,000 respectively. The cleanup goals for this remedy are MCLs.

The residuals from this treatment process will be treated in accordance with LDRs and properly disposed off-site at a RCRA permitted landfill or regenerated in a RCRA permitted treatment unit which is in compliance with 40 CFR Part 264 Subpart X because the residuals will contain listed hazardous wastes.

X. Statutory Determinations

The selected remedy must satisfy the requirements of Section 121(a-e) of CERCLA to:

- A. Protect human health and the environment;
- B. Comply with ARARs;
- C. Be cost-effective;
- D. Utilize permanent solutions and alternate treatment technologies to the maximum extent practicable; and,
- E. Satisfy a preference for treatment as a principle element of the remedy.

The implementation of Alternatives 6 and 10 at the OCI Site satisfies the requirements of CERCLA as detailed below:

A. Protection of Human Health and the Environment

Implementation of the selected alternatives will reduce and control potential risks to human health posed by exposure to contaminated soil, and ground water. Extraction and treatment of contaminated ground water will be conducted to meet federal and state Ground-Water Cleanup Standards. Soil and debris at the Site will be excavated and backfilled so that the direct contact exposure risk will be reduced to 10^{-4} and migration of contaminants to ground water will be mitigated.

With regard to the community and onsite workers, all alternatives will pose potential risks from dust and air emissions generated during excavation activities. Perimeter air monitoring will be needed during remedial activities to determine if steps are needed to protect the community from adverse air emissions. Workers will be required to wear the proper protective health and safety equipment to protect their safety. None of these short-term risks will result in unacceptable exposures to human health or the environment.

B. Compliance With ARARS

The remedies selected for final action, Alternatives 6 and 10, will comply with ARARS that are pertinent to this scope of action. The ARARs for the final response action are listed below.

B.1 Chemical-specific ARARS

Chemical-specific ARARs regulate the release to the environment of specific substances having certain chemical characteristics. Chemical-specific ARARs typically determine the extent of cleanup at a site.

B.1.a Soils

The soil clean-up standards for the OCI Site will be based on risk based criteria for an industrial setting.

B.1.b Groundwater

Maximum Contaminant Levels (MCLs), and the non-zero Maximum Contaminant Level Goals (MCLGs), the Federal drinking water standards promulgated under the Safe Drinking Water Act (SDWA), are applicable to municipal water supplies servicing 25 or more people. At the OCI Site, MCLs and MCLGs are not applicable, but are relevant and appropriate, since the sand and gravel aquifer is a Class IIB source which could potentially be used for drinking in the area of concern (the contaminant plume). MCLGs are relevant and appropriate when the standard is set at a level greater than zero (for non-carcinogens), otherwise, MCLs are relevant and appropriate. The point of compliance for ground water standards may be

attained at an APC in accordance with Part 201, which is applicable, rather than throughout the plume. The timeframe for compliance will depend on the point of compliance.

B.1.b Surface Water

i. State ARARs

Section 303 of the CWA requires the State to promulgate state water quality standards for surface water bodies, based on the designated uses of the surface water bodies. CERCLA remedial actions involving surface water bodies must ensure that applicable or relevant and appropriate state water quality standards are met. The standards established pursuant to R323.2102-.2189 of the Michigan Water Resources Commission Act, Public Act 245 of 1929, as amended, would be applicable to this Site. The Grand River near the OCI Site is designated a cold water fishery as is Roy's Creek where the groundwater treatment system discharges.

B.2 Location-specific ARARs

Location-specific ARARs are those requirements that relate to the geographical position of a site. There are no location-specific ARARs for this Site.

B.3 Action-specific ARARs

Action-specific ARARs are requirements that define acceptable treatment and disposal procedures for hazardous substances.

i. Federal and State RCRA ARARs

The substantive requirements of RCRA waste generation and temporary storage regulations under 40 CFR Part 262 and MAC R299.9601-.11107 are applicable when managing the treatment residuals from the ground water system (e.g., residual carbon). Also, Federal and State RCRA LDRs governing off site disposal are applicable to the disposal of treatment residuals.

ii. State ARARS

The State is authorized to implement the National Pollutant Discharge Elimination System (NPDES) program. The requirements of a Michigan Pollutant Discharge Elimination System (MPDES) permit, under MAC R323.2102-.2189 has been applied to the discharge of the treated water into Roy's Creek. Effluent limits for surface water discharge have been established by the MDEQ, with approval by EPA.

Additional action-specific ARARs are found in the FS.

C. Cost-effectiveness

EPA believes the selected remedy is cost-effective in eliminating the principle threats, and protecting residents and the environment from the contaminated soil at the Site. Cost-effectiveness compares the effectiveness of an alternative in proportion to its cost of providing its environmental benefits. Alternative 6 was the least costly of the seven alternatives that met the objective of the remedial action of eliminating the principle threat at the Site. Alternative 10 was the only alternative for groundwater because it was determined in the FS that the existing system was capable of achieving compliance with the groundwater cleanup goal. Alternatives 6 and 10 provide overall effectiveness proportional to its cost and represents a reasonable value.

D. Utilization of Permanent Solutions and Alternative Treatment Technologies to the Maximum Extent Practicable

EPA and the State of Michigan believe the selected remedy for the OCI Site represent the maximum extent to which permanent solutions and treatment technologies can be utilized in a cost-effective manner for the final action. The Alternative represents the best balance of tradeoffs among the alternatives with respect to the pertinent criteria given the limited scope of the action. (See above).

E. Preference for Treatment as a Principal Element

The principal threat at the OCI Site is the contaminated soil due to direct exposure. The remedies selected in this ROD satisfy the statutory preference for treatment as a principal element of the remedy by treating the ground water, but does not satisfy the preference by excavating and stabilizing the contaminated soils at the OCI Site.

XI. Documentation of Significant Changes

The preferred alternative in the proposed plan (PP) was to continue operation of the existing groundwater treatment system until the cleanup goals were met. Although not explicitly stated in the PP, the cleanup goals were to be met throughout the plume. Comments received from the two PRP groups requested that institutional controls allow for an APC because the UGS is not used as a drinking water source, is not expected to be used as a drinking water source and the Site is remote. As a result of this comment the Selected Alternative was modified in Section IX to be a remedy allowing for institutional controls to determine an APC.

**APPENDIX
RESPONSIVENESS SUMMARY
ORGANIC CHEMICALS INC. SITE
GRANDVILLE, MICHIGAN**

I. Responsiveness Summary Overview

In accordance with CERCLA 117, the U.S. Environmental Protection Agency (EPA) held a public comment period from July 15, 1996 through August 28, 1996 for interested parties to comment on the Proposed Plan (PP) for the final remedial action at the Organic Chemicals Inc. (OCI) Site in Grandville, Michigan (the Site").

The PP provides a summary of the background information leading up to the public comment period. Specifically, the PP includes information pertaining to the history of the OCI Site, the scope of the proposed cleanup action and its role in the overall Site cleanup, the risks presented by the Site, the descriptions of the remedial alternatives evaluated by EPA, the identification of EPA's preferred alternative, the rationale for EPA's preferred alternative, and the community's role in the remedy selection process.

EPA held a public meeting at 7:00 p.m. on July 16, 1996, at the Grandville City Council Chambers in Grandville, Michigan to outline the remedial alternatives for the final action described in the PP and to present EPA's proposed remedial alternatives for treating the groundwater and soil contamination at the OCI Site.

The responsiveness summary, required by the Superfund Law, provides a summary of citizens' comments and concerns identified and received during the public comment period, and EPA's responses to those comments and concerns. All comments received by EPA during the public comment period will be considered in EPA's final decision for selecting the remedial alternative for addressing contamination at the OCI Site.

This responsiveness summary is organized into sections and appendices as described below:

- I. **RESPONSIVENESS SUMMARY OVERVIEW.** This section outlines the purposes of the Public Comment period and the Responsiveness Summary. It also references the appended background information leading up to the Public Comment period.
- II. **BACKGROUND ON COMMUNITY INVOLVEMENT AND CONCERNS.** This section provides a brief history of community concerns and interests regarding the OCI Site.
- III. **SUMMARY OF MAJOR QUESTIONS AND COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD AND EPA RESPONSES TO THESE COMMENTS.** This section summarizes the oral comments

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Plymouth, MI 48170

Konica Graphic Imaging International, Inc., f/k/a Konica Imaging, U.S.A., Inc.,
f/k/a Chemco Technologies, Inc. f/k/a Powers Chemco, Inc. (a/k/a Powers Chemical
Company) f/ka Powers Photo Engraving Company
James T. Weiner
30600 Telegraph Road, Suite 3350
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Essex Group, Inc.
Jeffrey K. Haynes
VanderKloot, Rentrop, Martin, Haynes & Morrison, P.C.
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Bloomfield Hills, MI 48303-0249

received by EPA at the July 16, 1996 public meeting, and provides EPA's responses to these comments.

IV. WRITTEN COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD AND EPA RESPONSES TO THESE COMMENTS. This section contains the written comments received by EPA, as well as EPA's response to those written comments.

II. BACKGROUND ON COMMUNITY INVOLVEMENT AND CONCERNS

Local awareness of the OCI site has been minimal from the onset because the area has been industrial since 1939 and has not impacted the general public. More interest has been shown by adjacent industries and the OCI's former customers that have been named as potentially responsible parties.

A public availability session was held on May 10, 1989, to inform the public of the remedial investigation and sampling and to answer questions concerning the site. Most of the individuals that attended the session included interested land owners adjacent to OCI and were interested in the time frame to perform the investigation and begin remediation.

As part of EPA's responsibility and commitment to the Superfund Program, the community has been kept informed of ongoing activities conducted at the OCI site. EPA has established a repository at the Grandville Public Library, where relevant site documents may be viewed. Documents stored at the repository include:

- The final Phase I Focused Feasibility Study for the site;
- The PP for the interim action at the site;
- Fact sheets summarizing the technical studies conducted at the site;
- The Phase II Remedial Investigation (RI) and Feasibility Study (FS);
- The PP for the final action at the site;
- Public Meeting Transcript for both Public Meetings.

EPA's selection of a remedy to cleanup the contamination at the OCI site will be presented in a document known as a Record of Decision (ROD). The ROD and the documents containing information that EPA used in making its decision (except for documents that are published and generally available) will also be placed in the information repository, as will this responsiveness summary.

III. Summary of Major Questions and Comments Received During the Public Comment Period and EPA Responses to These Comments

Oral comments raised during the public comment period for the OCI Site final remediation have been summarized below together with EPA's response to these comments.

COMMENT: Mr. Ken Cox stated support for preferred alternative of excavating the contaminated soil and on-site remediation by solidification/stabilization.

RESPONSE: EPA acknowledges the comment.

IV. Written Comments Received During the Public Comment Period.

The written comments regarding the OCI site have been summarized below, together with EPA's responses to these comments.

COMMENT: The Toll PRP Group expressed support for the preferred alternative for soil remediation.

RESPONSE: EPA acknowledges the comment.

COMMENT: One comment expressed by the Reclaim and Toll PRP Group was that the cleanup goals for the groundwater should not have to be obtained throughout the contaminated groundwater plume but should be determined by institutional controls because the aquifer is not used as a drinking water source. The Toll Group also requested that the cleanup goals be no more stringent than the MDEQ industrial cleanup goals for the soil and groundwater.

RESPONSE: As a result of this comment the selected remedy was modified to allow for an alternate point of compliance to be determined through institutional controls to attain the cleanup goals. A monitoring plan that meets the substantive requirements of Part 201 will be developed to ensure the effectiveness of the remedial action.

The groundwater cleanup goals were changed from the residential risk based goal to the Maximum Contaminant Levels (MCLs) determined by the Safe Drinking Water Act. The change was made because MCLs have been used by Region V in the past for similar aquifer conditions. The soil cleanup goals are for an industrial setting.

COMMENT: The Toll Group has requested that deed restrictions be placed on the OCI property to keep it industrial.

RESPONSE: Deed restrictions are not necessary because the position of the City of Grandville is that the zoning of the property will remain industrial.

COMMENT: The Toll Group requested that the groundwater cleanup goals be re-evaluated as part of the five year review.

RESPONSE: Re-evaluation of the groundwater cleanup goals is not a function of the five year review.

COMMENT: The calculated risk and hazard associated with ingestion of groundwater from the upper groundwater system was presented in the Feasibility Study. The UGS does not present an environmental risk, and as such, the evaluation was inappropriate.

RESPONSE: The MDEQ does consider this aquifer to be a usable aquifer and therefore, the evaluation is appropriate.

COMMENT: The groundwater remedy selected in the FS for OU2, was selected in the FS without benefit of the development of other alternatives for comparison of feasibility, cost, contrary to the requirements of the NCP. Also, the FS is not the instrument for selection of remedies in the NCP, but rather is meant solely for the development and comparison of remedial alternatives. The OU1 groundwater remedy was selected as an interim action until OU2 could be implemented, and was not meant to be a final remedy (CERCLA 106 Order, Page 7, Item G).

RESPONSE: The Alternatives Array Technical Memorandum (AATM) issued October 12, 1995, presented the groundwater remedial action objectives and the alternative based on those objectives. The FS did not select the groundwater remedy. It was the only remedial alternative presented in the FS for the groundwater because it was properly screened and made available for comment in the AATM in accordance with the NCP.

The CERCLA 106 Order, Page 7, Item G states:

"USEPA has divided the site into two operable units. The first operable unit is an interim action that is intended to address the migration of contaminated groundwater in the UGS. The second operable unit will address soil contamination and a final groundwater remedy."

The final groundwater remedy selected in OU2 is consistent with the OU1 interim action groundwater remedy pursuant to 40 CFR 300.430 (f)(ii)(C)(1).

COMMENT: The Reclaim PRP Group provided solvents to OCI for recycling. The Reclaim PRP group should not be considered PRPs for the OU2 soils Remedial Action because they did not provide the constituents which are identified in the FS as contributors to degradation of human health or the environment.

RESPONSE: The EPA considers members of the Reclaim PRP Group to be PRPs, because those PRPs arranged for the disposal or treatment of hazardous substances at the site, and those PRPs' hazardous substances, or hazardous substances similar to those of the PRPs, are present at the site. Because the site contamination is not divisible between OCI's solvent recycling operation and its chemical manufacturing operation, the reclaim and toll manufacturing PRPs are jointly and severally liable for the entire costs of site remediation.

COMMENT: The inorganic chromium (VI) was not analyzed in the RI. Only chromium (III) was analyzed for at the site. Chromium (VI) should not be listed as a compound of concern.

RESPONSE: It was assumed to be present at the site due to the difficulty associated with sampling for chromium (VI). If it can be reliably demonstrated to both EPA and MDEQ that chromium (VI) does not exist at OCI, it can be proposed that it be eliminated as a contaminant of concern.

COMMENT: The FS states that lead is one of the compounds that poses greater than 1 percent of the carcinogenic risk. Examination of the FS current trespasser and future worker scenarios reveals that lead does not contribute to the total carcinogenic risk under either scenario.

RESPONSE: Correct, lead does not contribute to the total carcinogenic risk under either scenario.

COMMENT: A cleanup depth of 10 feet is used in the future worker scenario. However, future workers will not be exposed to Site soils to a depth of 10 feet on a regular basis year after year.

RESPONSE: The cleanup depth scenario is very conservative.

COMMENT: Changes in soil volume and increases in leachate failure could increase the cost of Alternative 6 between two and three million dollars. As a result the Reclaim Group advocates the use of the capping alternative as the alternative that best satisfies the various criteria set out in the NCP for selection of the Remedial Action.

RESPONSE: If as a result of the predesign investigation, the cost of solidification/stabilization and disposing of the contaminated soil on-site significantly increases, the Group can request that the capping alternative be implemented in its place. Table 4-10 evaluates the cost of increasing the soil volume 100% for Alternative 6; the resultant change in soil volume would increase the present worth cost to 2.7 million dollars as compared to 2.3 million for capping, which may not warrant a change in the Selected Remedy. The Group can request that the OU2 ROD be amended and that the cap alternative be implemented.

COMMENT: On page 4-16 of the FS the first paragraph states "A 1-foot vegetative cover would eliminate dermal exposure to the solidified mass" and the second paragraph indicates that a 2-foot vegetative cover is required. The Reclaim Group feels that a 1-foot vegetative cover is adequate.

RESPONSE: The amount of vegetative cover should be determined during design.

COMMENT: Asphalt capping is equivalent in achieving ARARs for the soil contaminants of concern to the stabilization remedy. Concrete capping reduces the mobility of the contaminants by removing the exposure pathways. An asphalt cap achieves the overall purpose of preventing exposure to the soil contaminants of concern.

RESPONSE: Capping does not achieve chemical specific ARARS, the stabilization remedy does.

COMMENT: In Table 4-11 of the FS, low rankings for Alternatives 1, 2, and 3 were awarded for short-term effectiveness, and Alternatives 4 through 9 were awarded high rankings but involve excavation, increased traffic noise and dust.

RESPONSE: Table 4-11 is incorrect with regard to short-term effectiveness as the commenter states, although Alternatives 3 through 9 have comparable short term impacts to one another as stated on page 4-41 of the FS.

COMMENT: Alternative 3-Capping is an effective remedial alternative comparable in long-term effectiveness to Alternative 6-Stabilization. Both alternatives provide long term controls to prevent exposure and migration of hazardous constituents contained in soil.

RESPONSE: In Section 4.4.2 of the FS on pages 4-41 and 42 it explains that Alternative 6 has greater long-term effectiveness than Alternative 3 because it eliminates human exposures and migration of hazardous constituents as compared to minimizing exposure and migration.

COMMENT: Alternative 5-Soil Washing is comparable in cost to Alternative 3 and 4 and should be evaluated with a comparable ranking score in the FS.

RESPONSE: Agreed, although Alternative 6 should have a higher score in the FS because it costs less than Alternatives 3, 4, and 5.

COMMENT: One commeter requested that the FS be revised to eliminate reference to n-nitroso-diphenylamine and replace it with diphenylamine.

RESPONSE: The change is unnecessary due to the change in the groundwater cleanup goals changed from residential risk based to MCLs. There is no MCL for either compound.

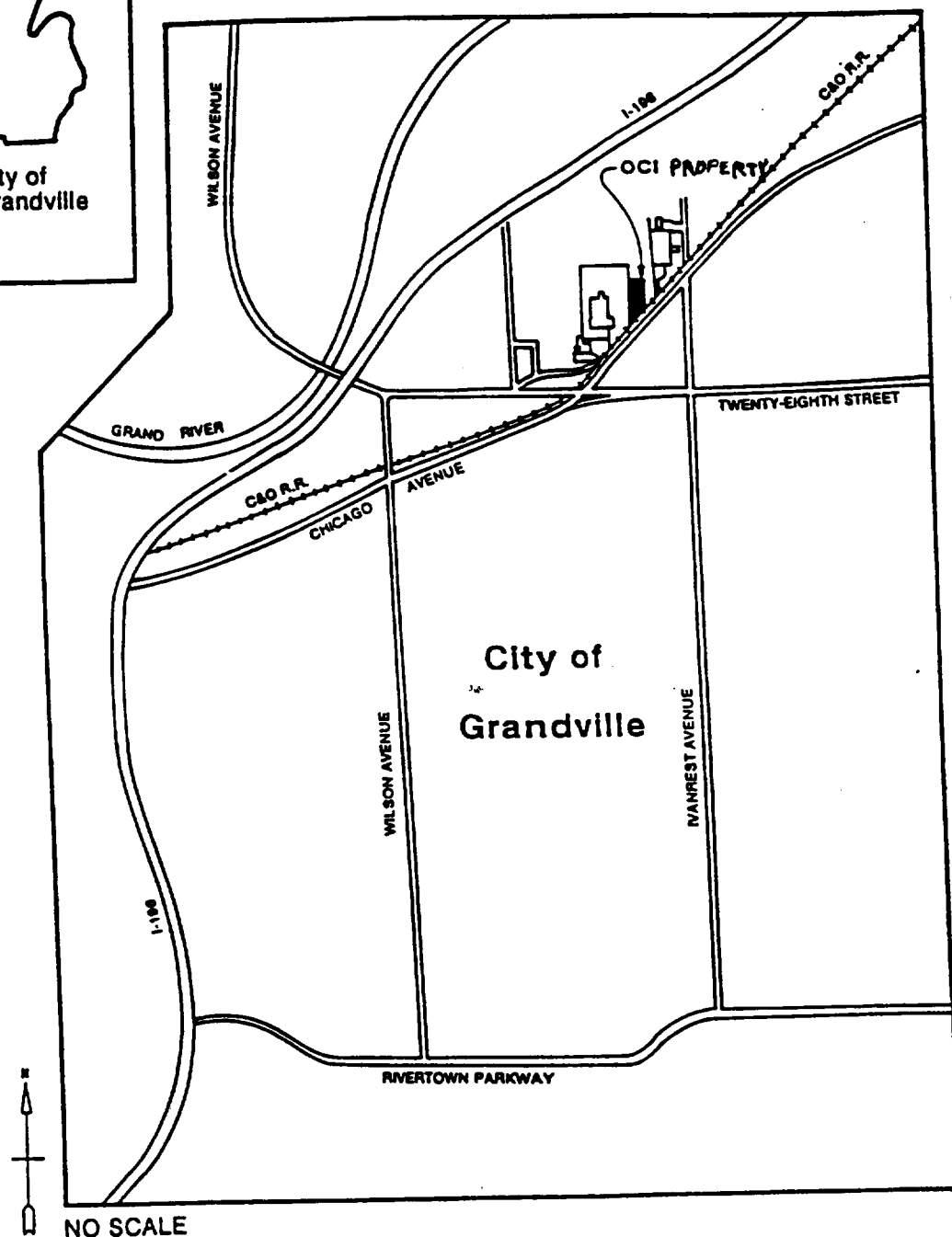
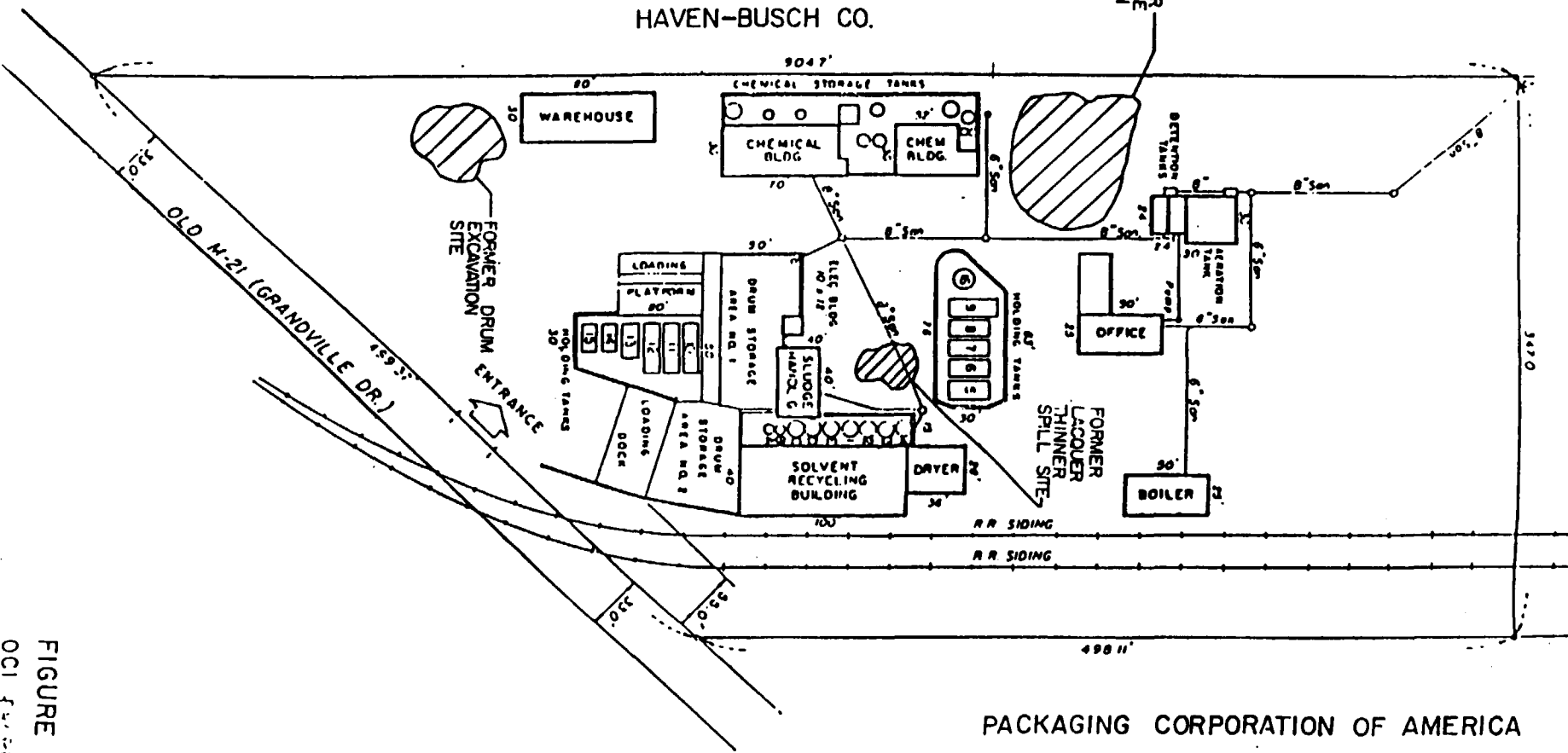


FIGURE 1
OCI SITE LOCATION MAP
ORGANIC CHEMICALS, INC. SITE

HAVEN-BUSCH CO.

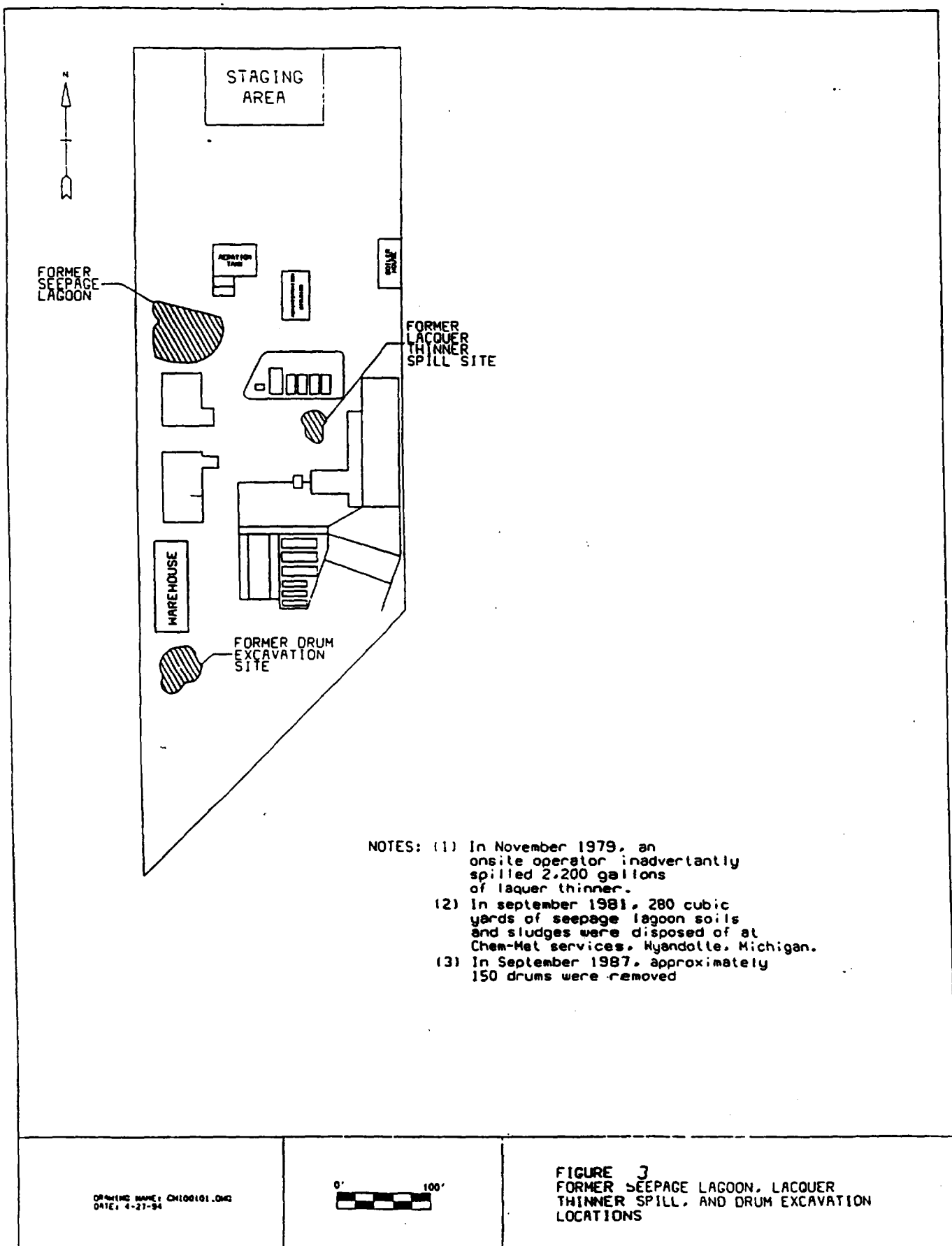
FORMER
SEWAGE
LAGOON



PACKAGING CORPORATION OF AMERICA

FIGURE 2

OCI Facility Detail



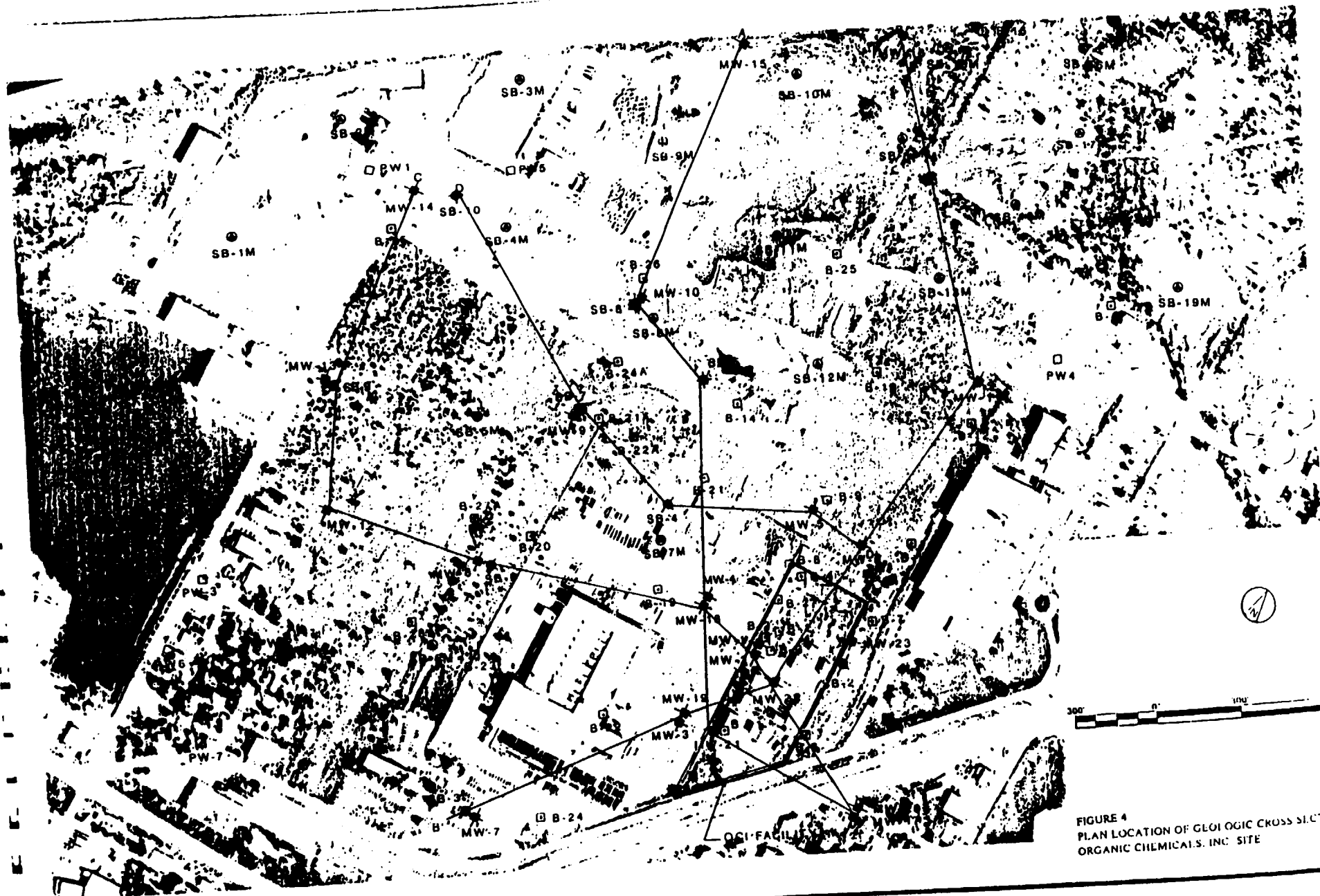


FIGURE 4
PLAN LOCATION OF GEOLOGIC CROSS SECTION
ORGANIC CHEMICALS, INC. SITE

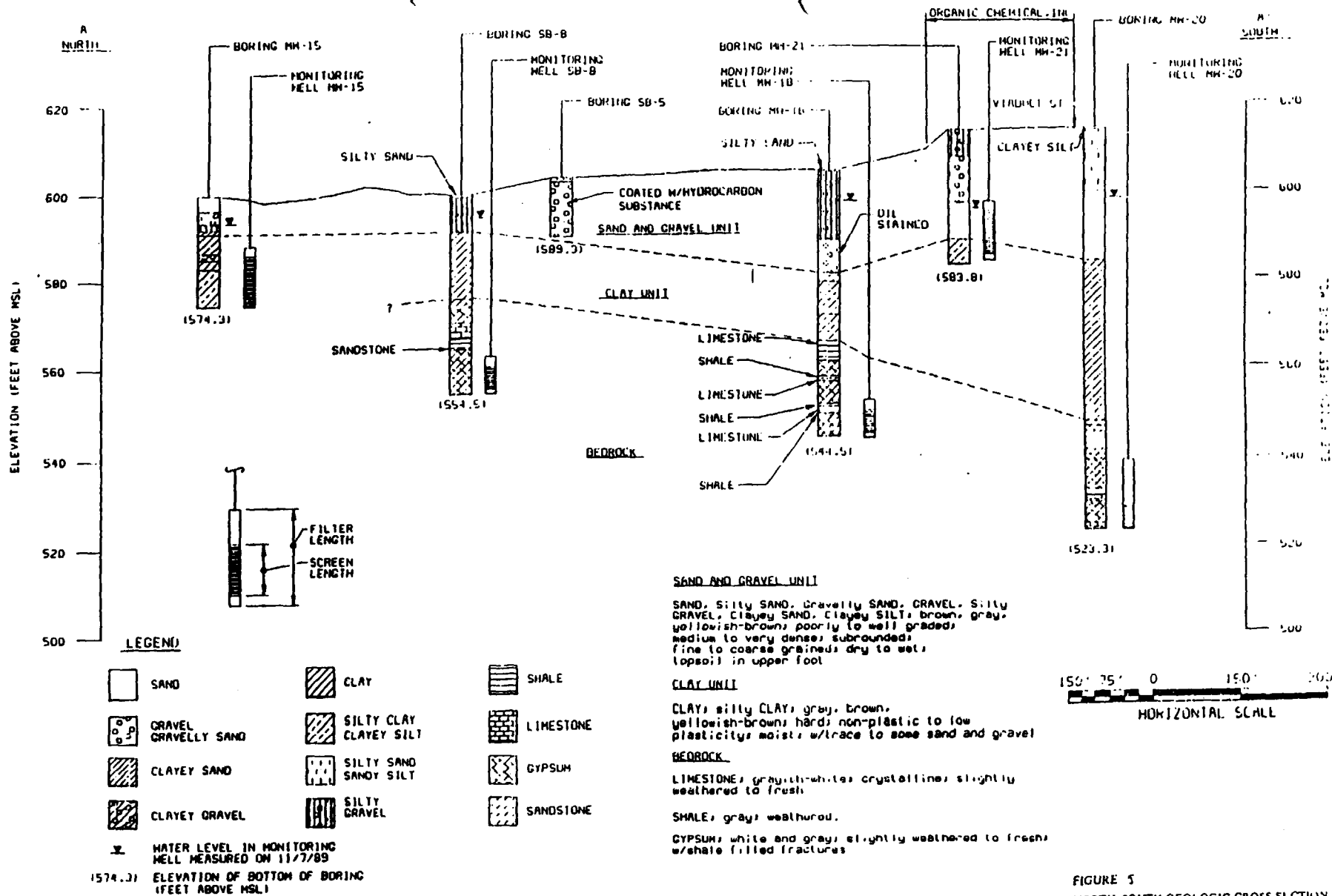


FIGURE 5
 NORTH-SOUTH GEOLOGIC CROSS SECTION A-A'
 ORGANIC CHEMICALS, INC. SITE

ESD OAC NO: 00000229
 DATE: 02-10-91 MEE
 PLOT SCALE: 1"=1'

CAO, DHC NO: C0000330
DATE: 02-15-91 MLEE
PLOT SCALE: 1" = 1'

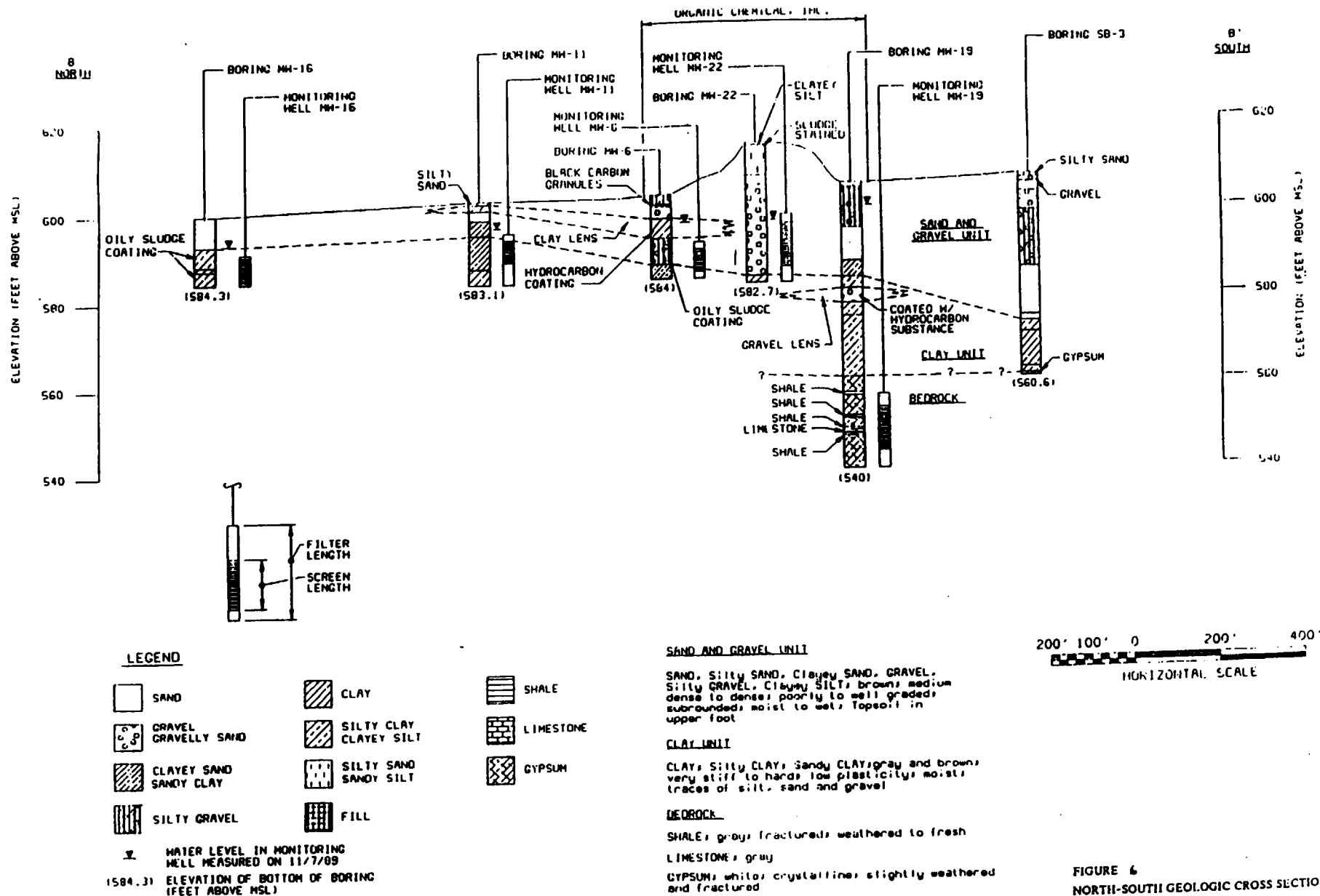


FIGURE 4
NORTH-SOUTH GEOLOGIC CROSS SECTION II
ORGANIC CHEMICALS, INC. SITE

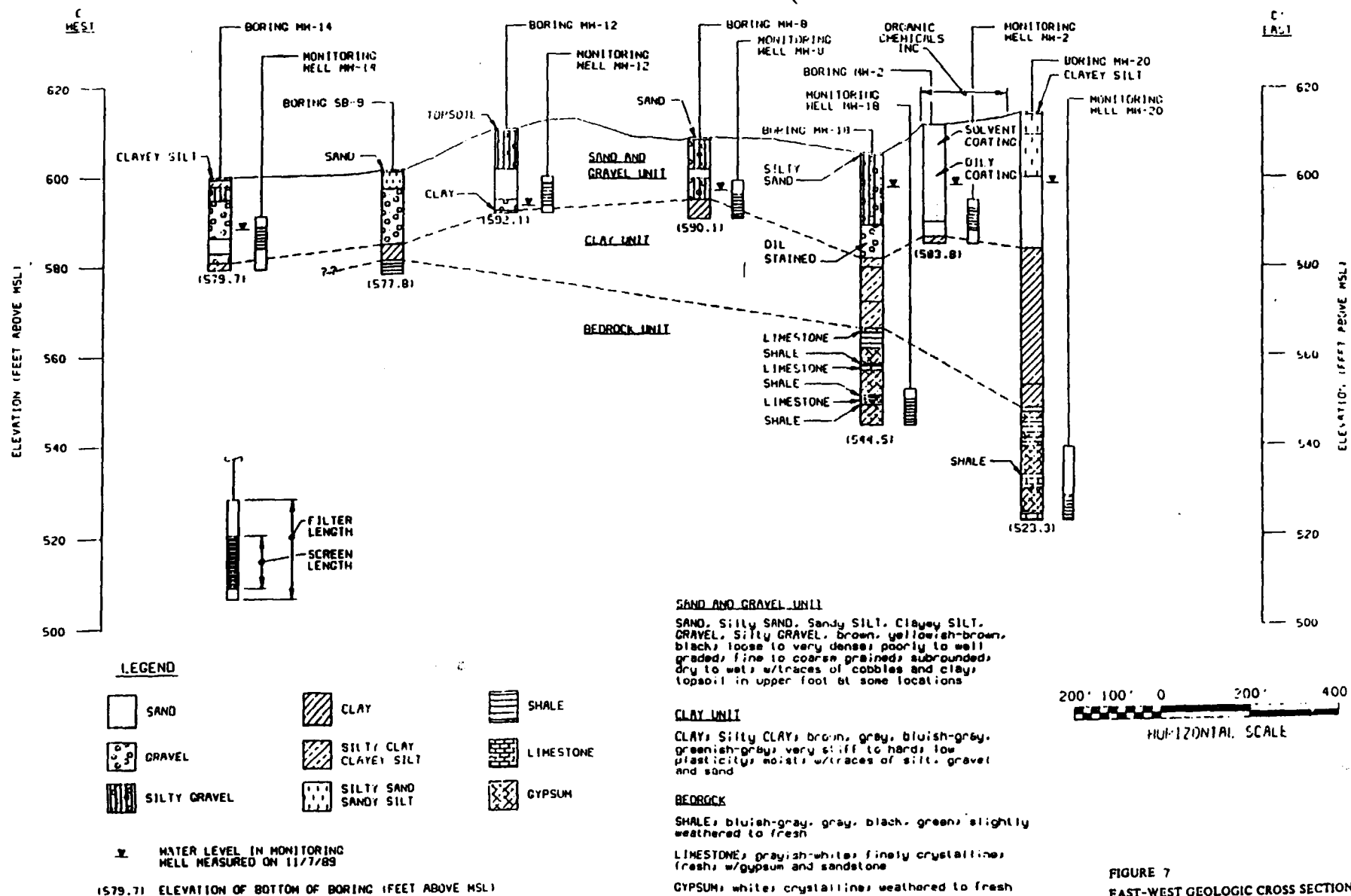


FIGURE 7
EAST-WEST GEOLOGIC CROSS SECTION C-1
ORGANIC CHEMICALS, INC. SITE

CAD DMC NO: C0000331
DATE: 10-1-90 MLE
PLOT SCALE: 1:1

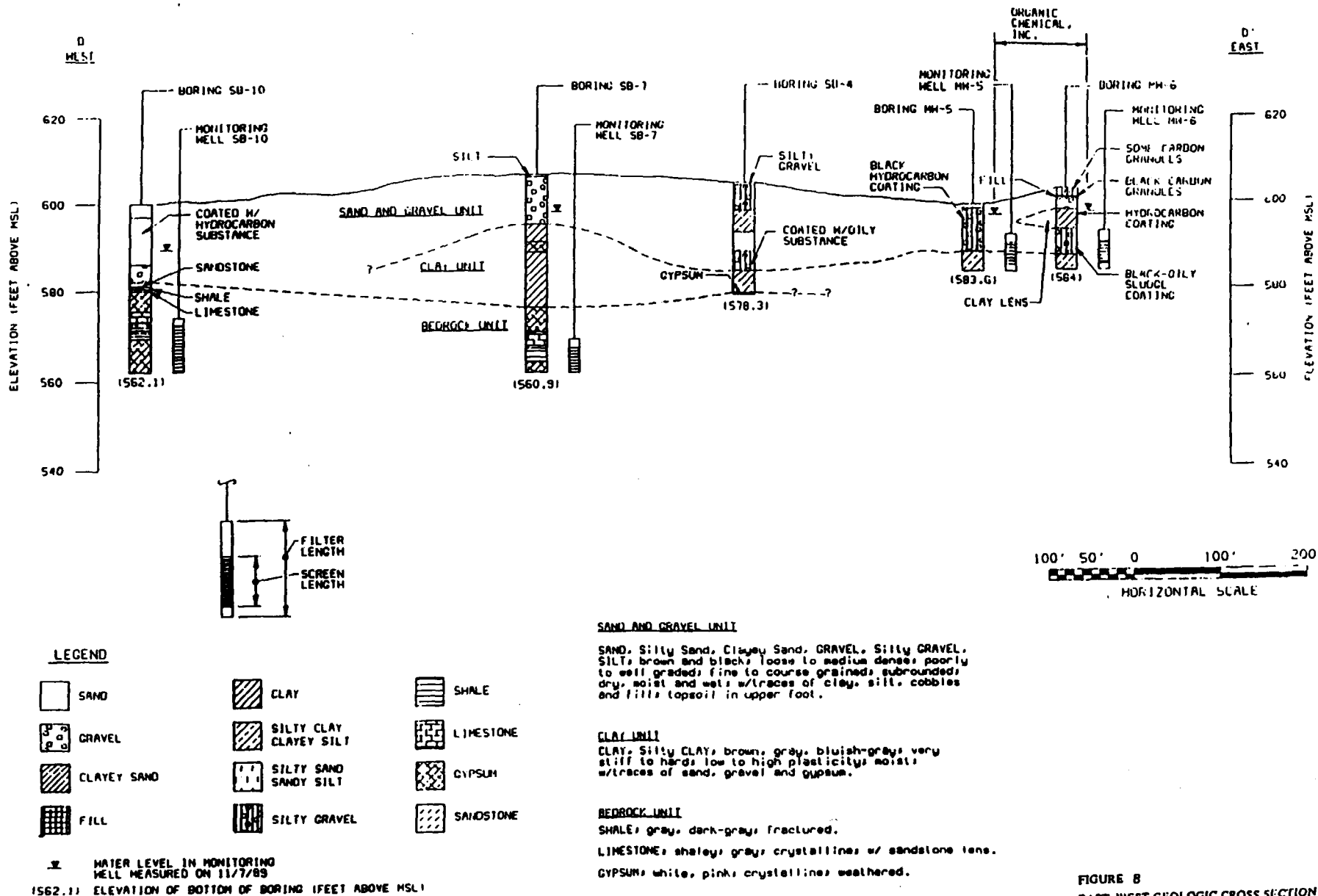


FIGURE 8
EAST-WEST GEOLOGIC CROSS SECTION D-1
ORGANIC CHEMICALS, INC. SITE

CAD DWG NO: C0000222
DATE: 10-1-89
PLOT SCALE: 1"=1'

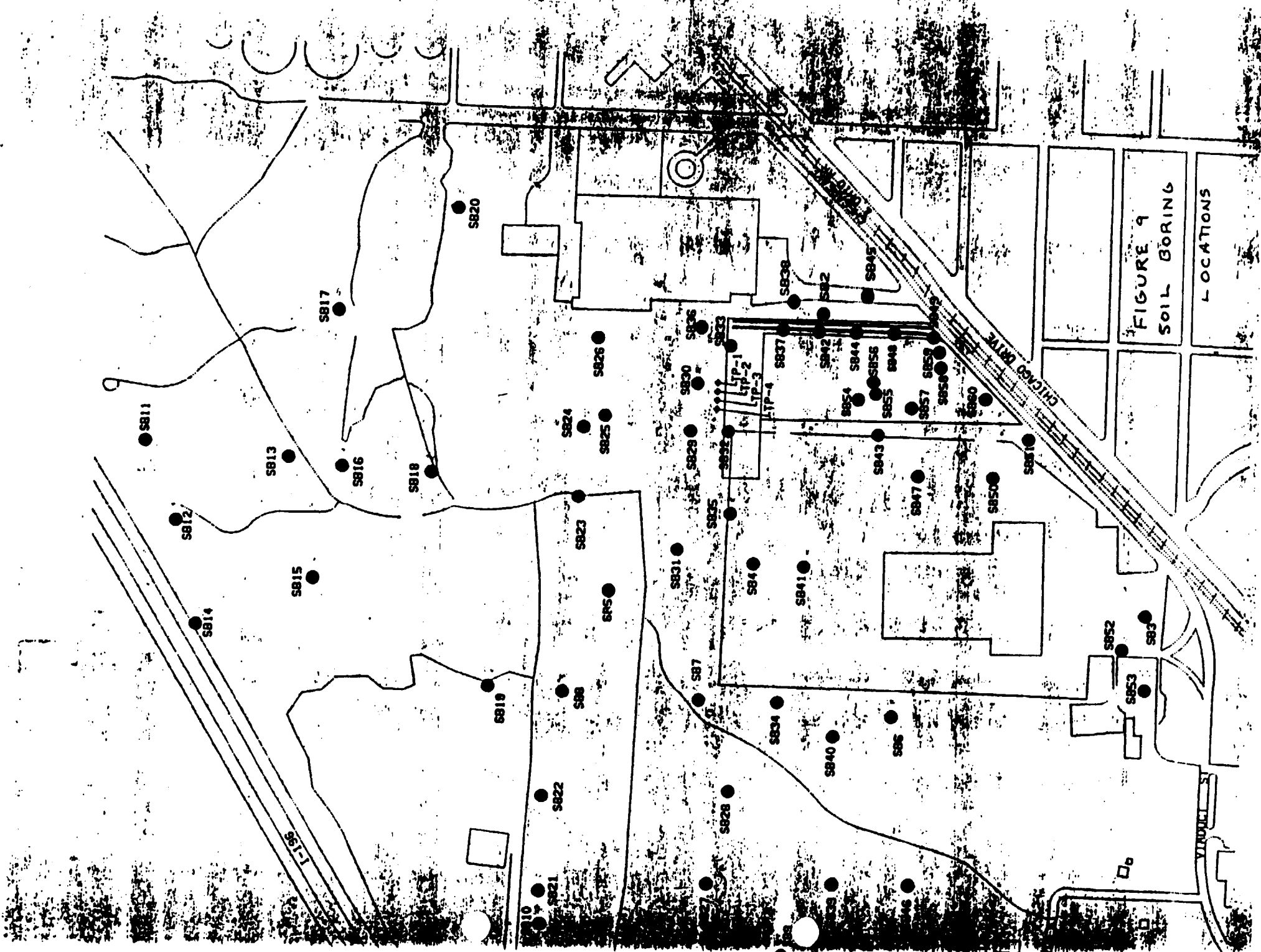
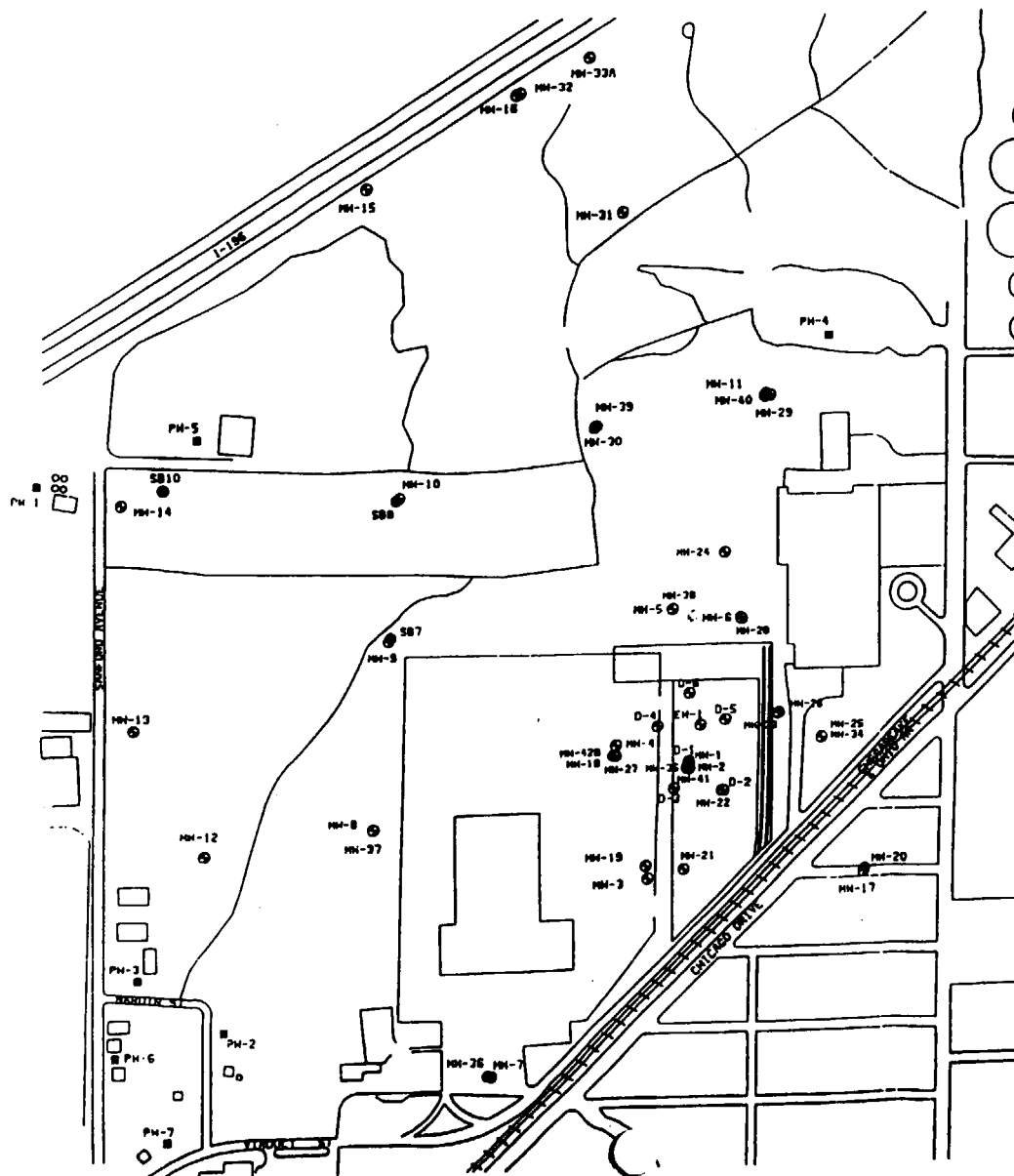


FIGURE 9
SOIL BORING
LOCATIONS



LEGEND:

- MONITORING WELL LOCATION
- MONITORING WELL LOCATION FROM CONVERTED SOIL BORING
- PRIVATE WELL

USEPA Wells Represented on Figure

Constructed during the Phase I RI	Well Screen	Constructed during the Phase II RI	Well Screen
MW1	UGS	MW24	UGS
MW2	UGS	MW25	UGS
MW3	UGS	MW26	UGS
MW4	UGS	MW27	UGS
MW5	UGS	MW28	UGS
MW6	UGS	MW29	UGS
MW7	UGS	MW30	UGS
MW8	UGS	MW31	UGS
MW9	UGS	MW32	UGS
MW10	UGS	MW33	UGS
MW11	UGS	MW34	LGS
MW12	UGS	MW35	LGS
MW13	UGS	MW36	LGS
MW14	UGS	MW37	LGS
MW15	UGS	MW38	LGS
MW16	UGS	MW39	LGS
MW17	UGS	MW40	LGS
MW18	LGS	MW41	LGS
MW19	LGS	MW42	LGS
MW20	LGS	D1	UGS
MW21	UGS	D2	UGS
MW22	UGS	D3	UGS
MW23	UGS	D4	UGS
SB7	LGS	D5	UGS
SB8	LGS	D6	UGS
SB10	LGS		

Private Wells Represented on Figure

PH-1	LGS	PH-5	LGS
PH-2	LGS	PH-6	LGS
PH-3	LGS	PH-7	LGS
PH-4	LGS		

CRA Extraction Well Represented on Figure

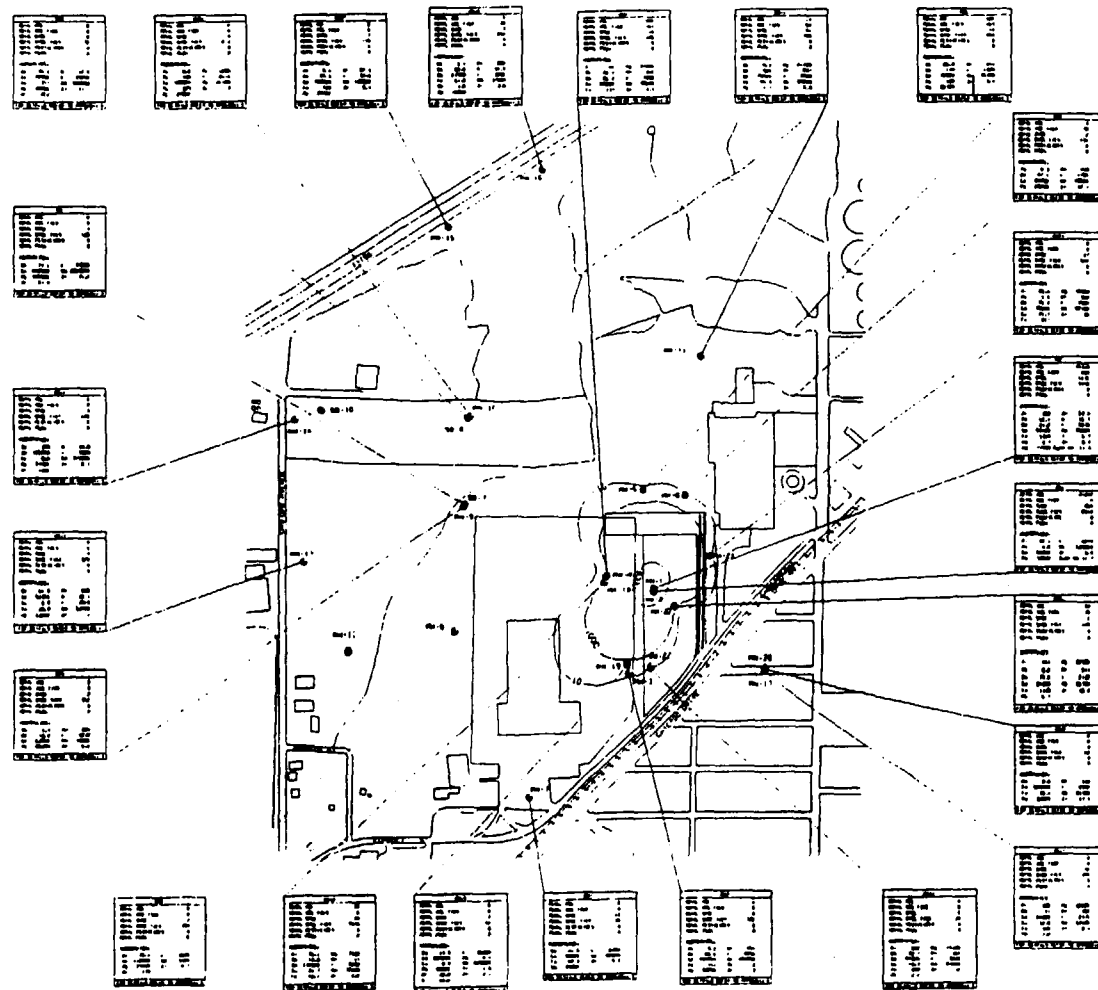
EW-1	UGS
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Note:
UGS= Upper Groundwater System
LGS= Lower Groundwater System

FIGURE 10
MONITORING WELL LOCATIONS

300' 150' 0 300' 600'

- ④ PAGE 1 CONTAINS THE STUDY LINE LOCATION
- ⑤ PAGE 1 CONTAINS THE STUDY LINE LOCATION
FROM (LAWFIELD) 5014, 5015



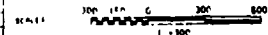
NOTE: 1999-2000 ERM CONTRACTS DIFFERENT TOTAL. CUMULATED
ON PRICE PERCENTAGE CONTRACTS IN 1999-2000.
AND 1999-2000 ERM CONTRACTS DIFFERENT TOTAL.

[illegible]

* CONCENTRATION IS THE AVERAGE OF BOTH MONITORING HELLS FOR ROUNDS 1 AND 2. LINES ARE CONTOLARED USING THE AVERAGE OF ROUNDS 1 AND 2 DATA. CONTROL LINES REPRESENT ONLY DATA FROM THE LOS. SEE APPENDIX 1 FOR DETAILS ON ISOLCHM COMPUTER GENERATION.

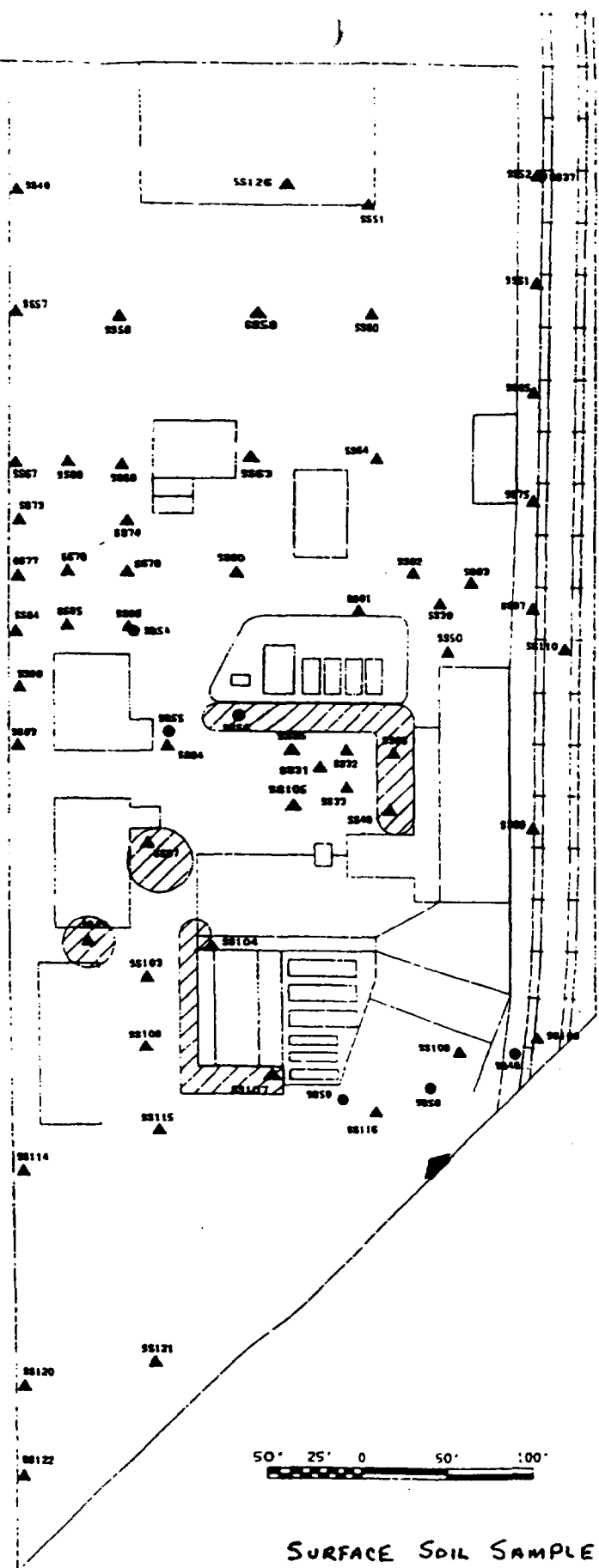
Monitoring Wells with Groundwater Analytical Results Represented on Figure

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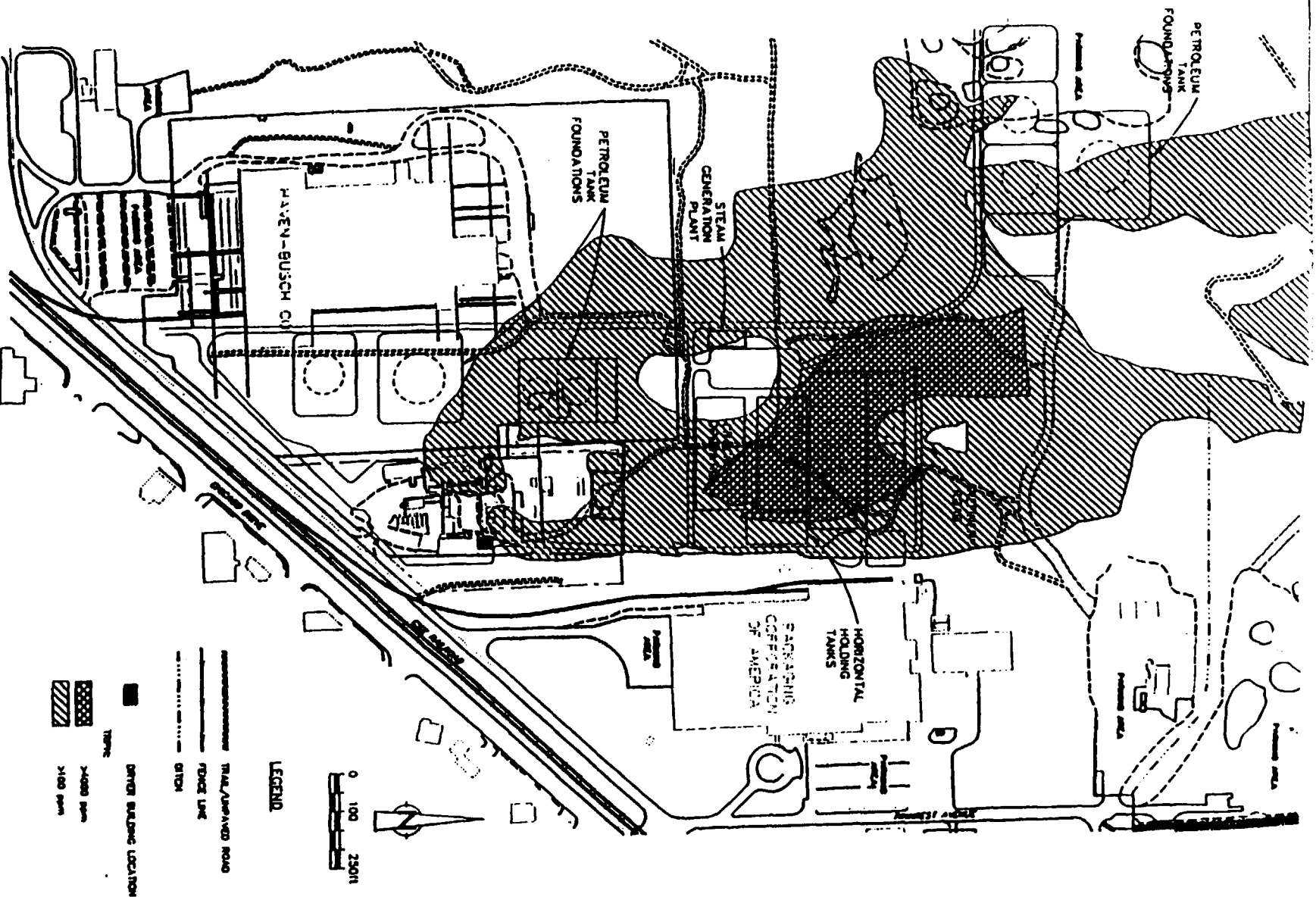
[illegible]

FILE NO.	SEARCHED	INDEXED	PERSONAL INVESTIGATION
FILED	DATE		ORGANIC CHEMICALS, INC.
FBI - NEW YORK			Grading Information
FIGURE 11			COORDINATE ANALYTICAL RESULTS

Hep. for 100 tests in 1000 tests		Analytical results represented by figure	
Initial test	Final test	Initial test	Final test
1000	1000	1000	1000
900	900	900	900
800	800	800	800
700	700	700	700
600	600	600	600
500	500	500	500
400	400	400	400
300	300	300	300
200	200	200	200
100	100	100	100
0	0	0	0

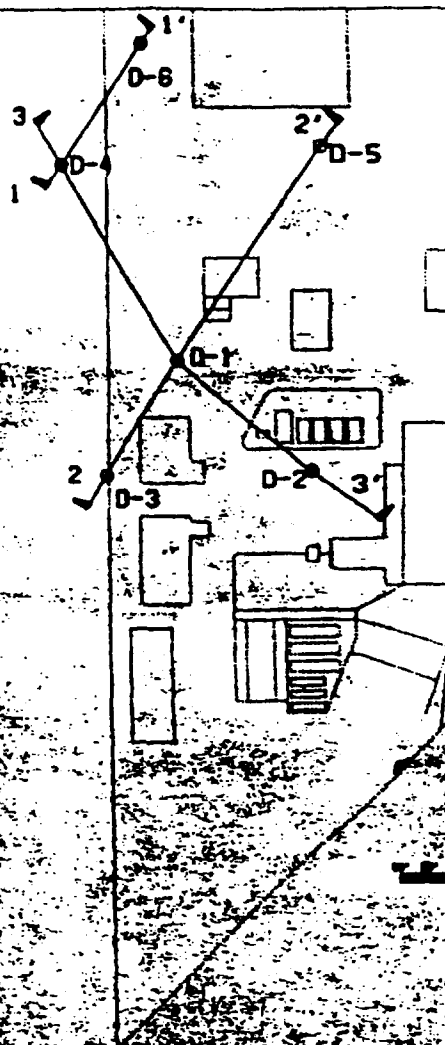


SURFACE SOIL SAMPLE
LOCATIONS
FIGURE 15



SOURCES: 1) CONSTRUCT-A-POWERS ASSOCIATES
 DRAFT # 04/1 PRE-FINAL DESIGN REPORT
 SEPTEMBER 22, 1983
 2) U.S. ARMY CORPS OF ENGINEERS' REPORT
 INITIAL USE OF THE SITE CHARACTERIZATION
 AND ANALYSIS FOR INDUSTRIAL SYSTEMS AT
 CHANDLER, ARIZONA SUPERFUND SITE
 DATED DECEMBER, 1982
 3) 1948 PLAN OF REFINERY
 HIGHEST NETWORKS

FIGURE 16
 FORMER REFINERY PLAN

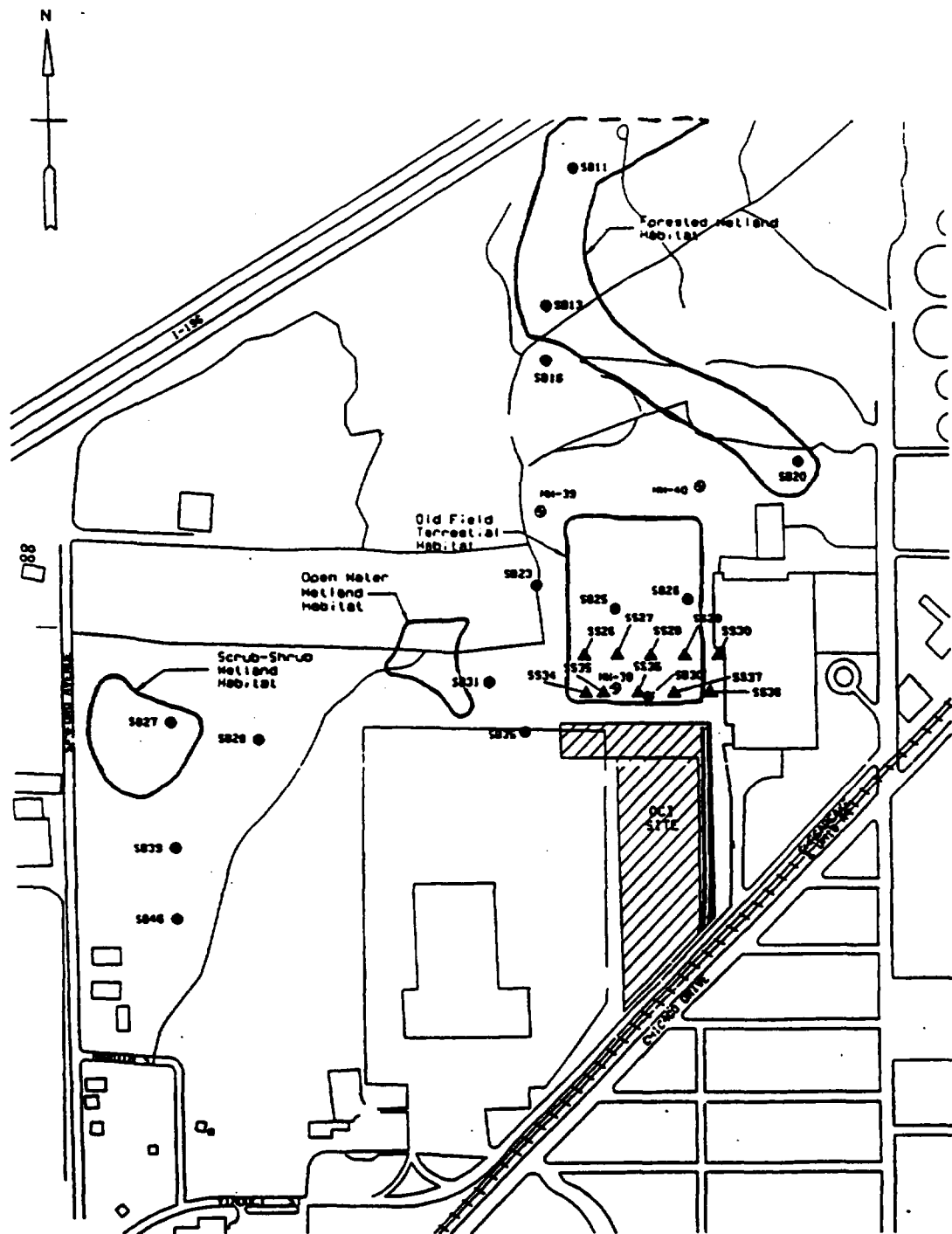


KEY PLAN

FIGURE 17

PROJECT	REMEDIAL INVESTIGATION
CLIENT	ORGANIC CHEMICALS, INC.
LOCATION	Grandville, Michigan
TITLE	DNAPL WELL CROSS SECTIONS 1-1', 2-2', 3-3'
REV	0

RE 2-77



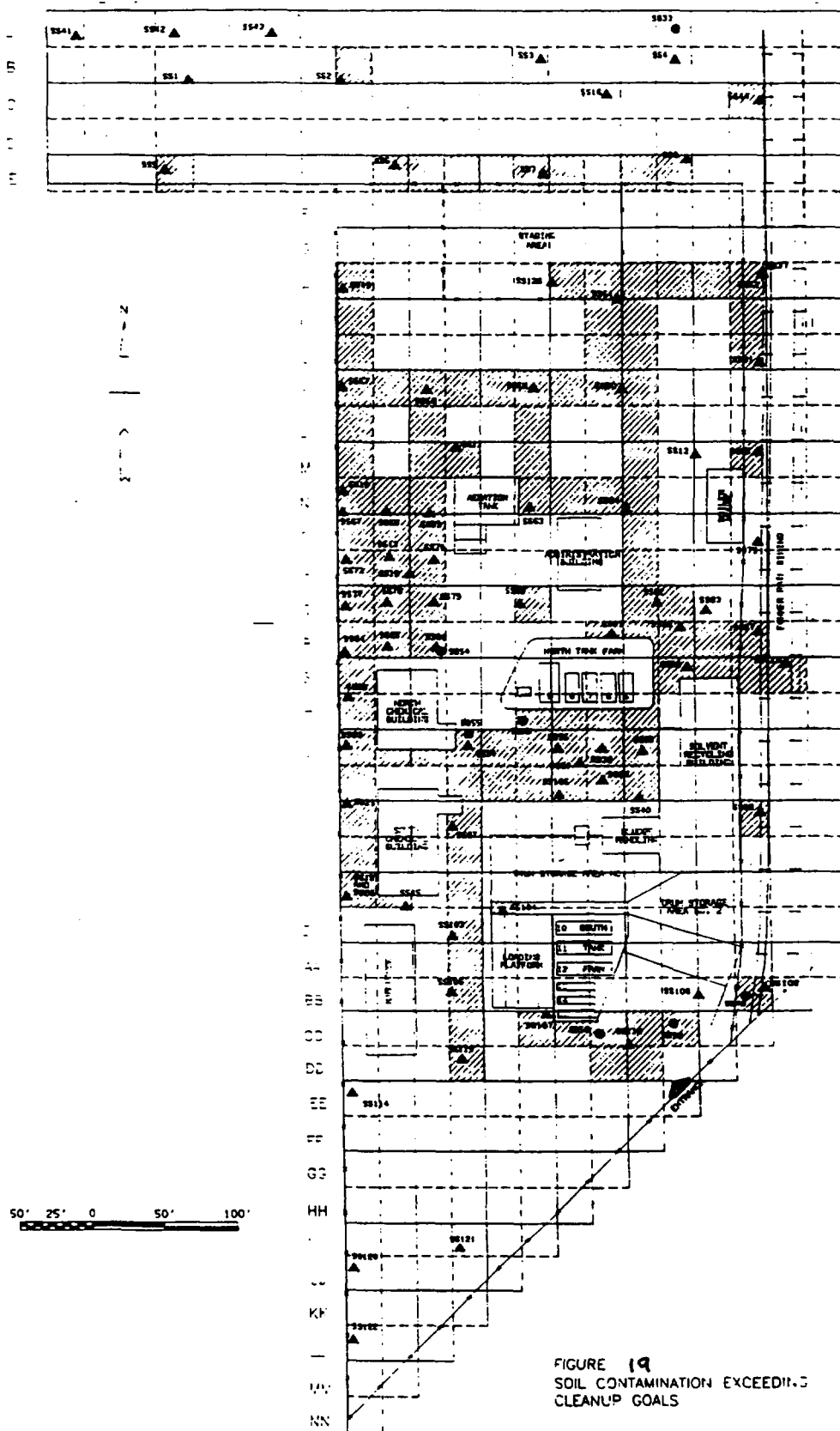
LEGEND:

- ▲ SURFACE SOIL LOCATION
- SURFACE SOIL LOCATION
TAKEN NEAR MONITORING WELL
- SURFACE SOIL LOCATION
AT SOIL BORING LOCATION

300' 150' 0 300' 600'
1"=300'

NOTE: Scrub-Shrub, Open Water, and Forested Wetland habitats are shown as depicted on National Wetlands Inventory, Greenville and Grand Rapids West, Michigan maps (MHI 1985a and MHI 1985b).

FIGURE 18
HABITAT SAMPLE LOCATION MA



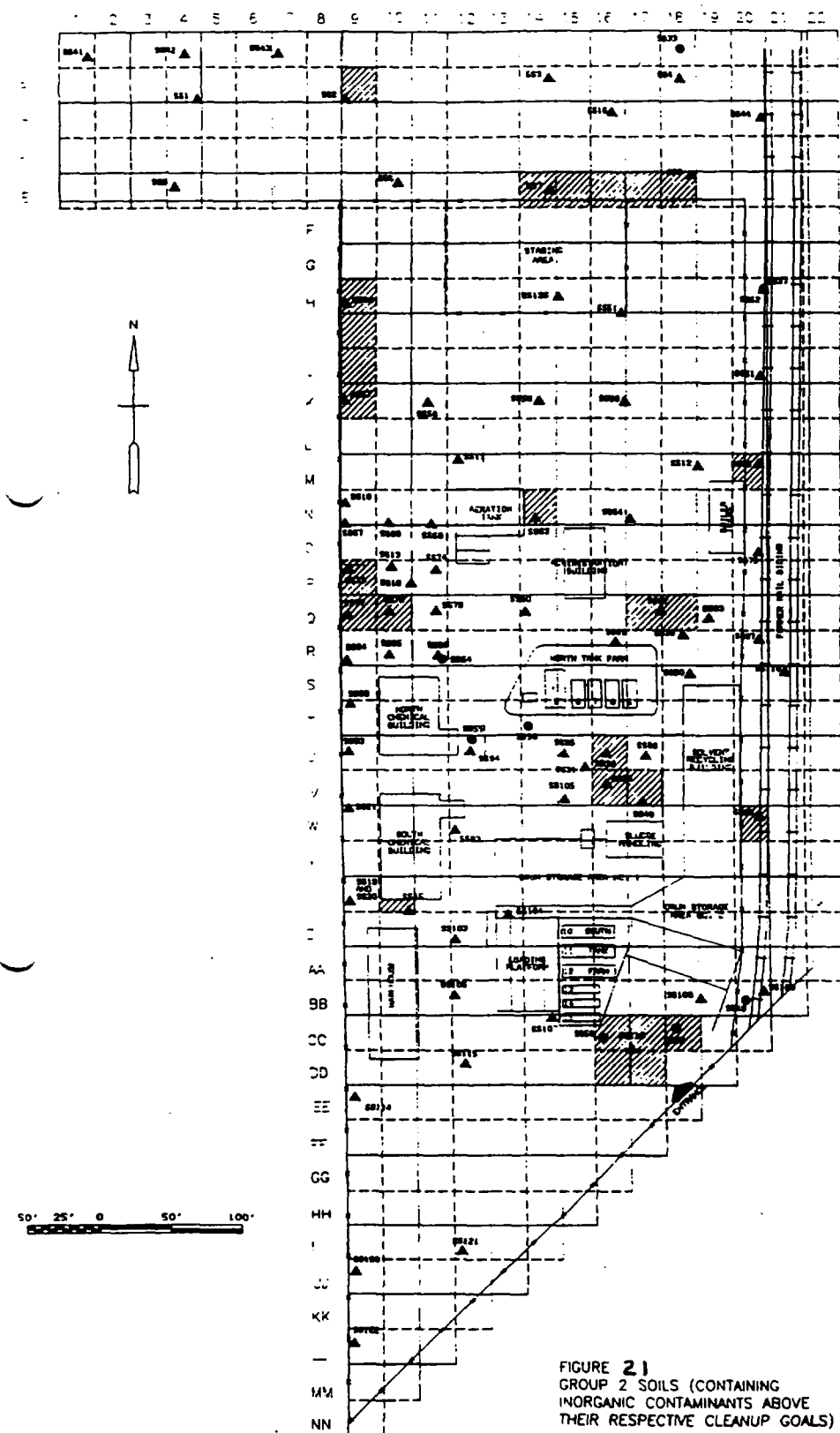
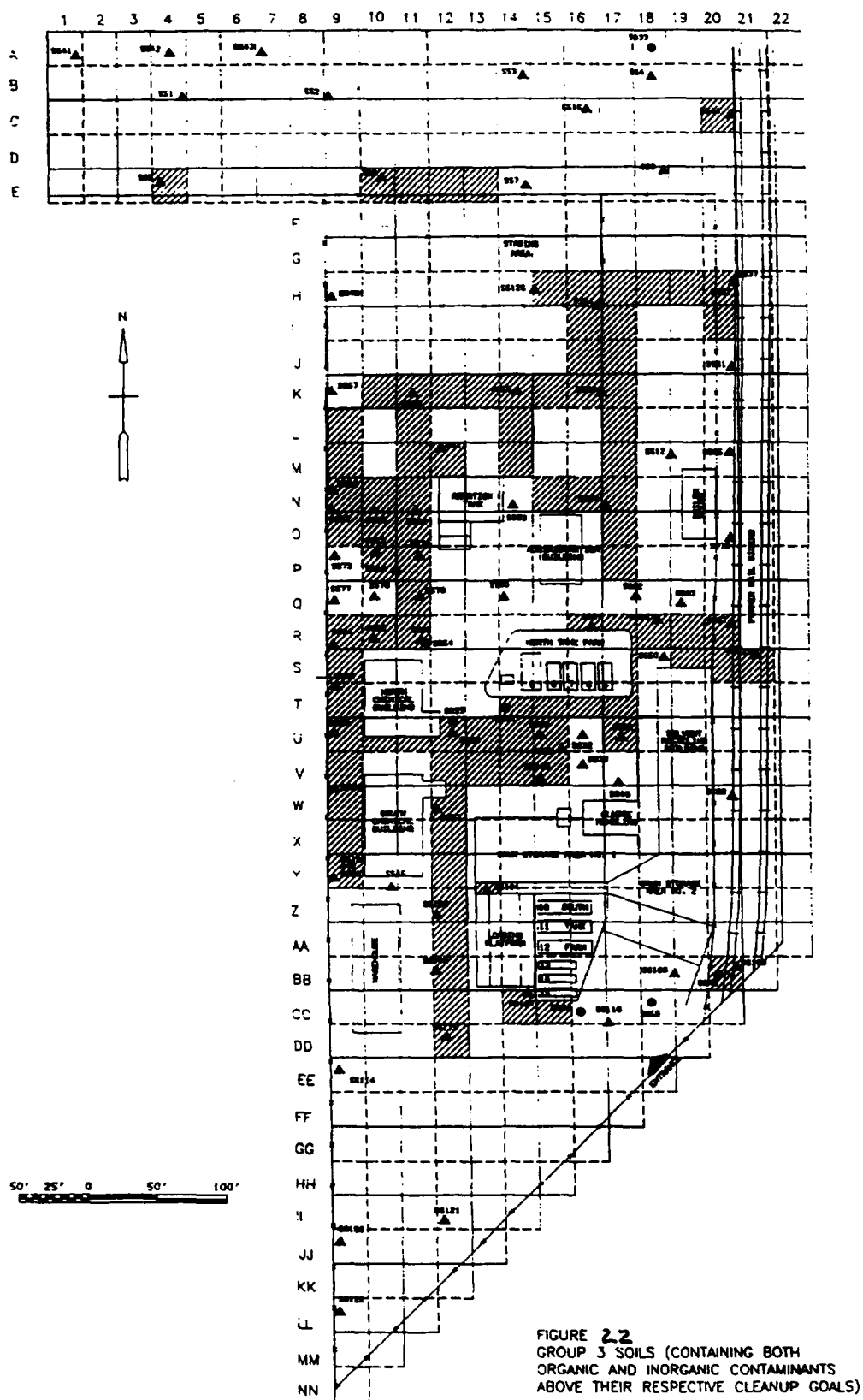


FIGURE 21
GROUP 2 SOILS (CONTAINING
INORGANIC CONTAMINANTS ABOVE
THEIR RESPECTIVE CLEANUP GOALS)



**Table 1 Inorganic Background Concentrations for
Groundwater Encountered During the Phase II RI.**

Analyte	UGS		LGS	
	Round 1 (ug/L)	Round 2 (ug/L)	Round 1 (ug/L)	Round 2 (ug/L)
Aluminum	33.5	28	33.5	28
Antimony	28.7	46	28.7	46
Arsenic	1.6	4.6	16	8.4
Barium	47.3	36.7	7.6	5.2
Beryllium	1.8	1	1.8	1
Cadmium	2	4	2	4
Calcium	74300	61400	559000	580000
Chromium	5	9	5	9
Cobalt	10.4	7	10.4	7
Copper	10.4	9	2.2	9
Iron	93.7	27	1530	1870
Lead	1	3	10	3
Magnesium	20400	15000	39500	41100
Manganese	458	346	121	123
Mercury	0.2	0.2	0.2	0.2
Nickel	17.1	19	15.3	19
Potassium	267	3030	9420	2000
Selenium	1.6	3	16	2
Silver	3.3	7	1.6	35.6
Sodium	77000	60700	101000	105000
Thallium	5.2	2	2	2
Vanadium	4.7	14	4.7	14
Zinc	6.9	7	3.5	7
Cyanide	10	10	10	10

Table 2. Comparison between Groundwater Inorganic Concentrations (ug/L) and Their Associated Background Concentrations (ug/L).

[illegible]

Table 4
Chemical-Specific Toxicity Values
Ingestion Exposures

Contaminant or Chemical	Ingestion Exposures					
	Oral Shore Factor (SF) mg/kg day	Wt of Ex	Oral Reference Dose (RfD) mg/kg day	R o f	Reference Date	Target Organ or System
1,2-Dichloroethane	9.1E-02	B2		I	05/02/94	stomach, esophagus
Aroclor		D	1E-01	I	05/02/94	kidney, liver
Chlorobenzene			2E-02	I	05/02/94	liver
Chloroform	4.1E-03	B2	1E-02	I	05/02/94	liver
Chloroethane	1.3E-02	C		H	10/15/93	kidney, gastrointestinal
Ethylbenzene		D	1E-01	I	05/02/94	liver, kidney
Methylene Chloride	7.5E-03	B2	6E-02	I	05/02/94	liver
Styrene			2E-01	I	05/02/94	RBC, liver
Tetrachloroethane	5.2E-02		1E-02	HI	05/02/94	liver
Toluene		D	2E-01	I	05/02/94	liver, kidney
Trichloroethane	1.1E-02	B2	6E-03	HE	10/15/93	liver
Xylene (mixed)		D	2E-00	I	05/02/94	CNS, dec. body weight
2,3,7,8-Tetra-CDD	1.5E-05	B2		H	10/15/93	liver
Is(2-Ethylhexyl)Phthalate	1.4E-02	B2	2E-02	I	05/02/94	liver, kidney
Dibenzodioxin		D		I	05/02/94	
Diallylphthalate		D	6E-01	I	05/02/94	dec growth rate
Di-n-Butylphthalate		D	1E-01	I	05/02/94	liver, kidney, blood
Di-n-Octyl Phthalate			2E-02	H	05/02/94	NA
Isophorone	9.5E-04	C	2E-01	I	05/02/94	kidney
N-Hexadecylphthalate(1)	4.9E-03	B2		I	05/02/94	bladder
Phenol		D	6E-01	I	05/02/94	dec. fetal body weight
4,4'-DDD	2.4E-01	B2		I	05/02/94	lung, liver
4,4'-DDE	3.4E-01	B2		I	05/02/94	liver
4,4'-DDT	3.4E-01	B2	5E-04	I	05/02/94	kidney, liver
Alkyl	1.7E-01	B2	3E-05	I	05/02/94	liver
Alpha-BHC	4.3E-00	B2		I	05/02/94	liver
Alpha-Chloroene	1.3E-00	B2	6E-05	I	05/02/94	liver
Aroclor-1248	7.7E-00	B2		I	05/02/94	liver
Delta-BHC		D		I	05/02/94	liver, kidney
Diiodine	1.6E-01	B2	5E-05	I	05/02/94	liver
Endosulfon II						liver
Endosulfon Sulfate						liver/liver
Endrin		D	3E-04	I	05/02/94	liver
Endrin Ketone						
Gamma-Chloroene	1.3E-00	B2	6E-05	I	05/02/94	liver
Heptachlor	4.5E-00	B2	5E-04	I	05/02/94	liver
Heptachlor Epoxide	9.1E-00	B2	1.3E-05	I	05/02/94	liver
Methoxychlor		D	5E-03	I	05/02/94	liver, kidney

TABLE 3
PHYSICAL AND CHEMICAL CONSTANTS OF DETECTED COMPOUNDS

COMPOUND	CAS #	M.W.	S.G.	Solubility (mg/l)	Log Kow	Koc	Vapor Pressure (mmHg)	Henry's Constant (atm-m3/mol)
CHLORINATED HYDROCARBONS								
Vinyl Chloride	75-01-4	63	0.91	2.8E+03	1.38	5.7E+01	2.7E+03	8.2E-02
1,1-Dichloroethene	75-34-3	99	1.18	5.1E+03	1.79	3.0E+01	2.3E+02	5.9E-03
1,2-Dichloroethene	107-06-2	99	1.24	8.5E+03	1.48	1.4E+01	6.4E+01	9.8E-04
1,1-Dichloroethene	75-35-4	97	1.22	2.3E+03	1.84	6.5E+01	5.9E+02	3.0E-02
cis-1,2-Dichloroethene	156-59-2	97	1.28	3.5E+03	0.70	4.9E+01	2.0E+02	7.6E-03
trans-1,2-Dichloroethene	156-60-5	97	1.26	6.3E+03	0.48	5.9E+01	3.4E+02	6.7E-03
Methylene Chloride	75-09-2	85	1.33	2.0E+04	1.25	8.8E+00	3.6E+02	2.7E-03
Tetrachloroethene	127-18-4	186	1.62	1.5E+02	2.60	3.6E+02	1.8E+01	2.5E-02
1,1,1-Trichloroethene	71-55-6	133	1.34	1.5E+03	2.49	1.5E+02	1.2E+02	1.4E-02
1,1,2-Trichloroethene	79-00-5	133	-	4.5E+03	2.47	5.6E+01	3.0E+01	1.2E-03
Trichloroethene	79-01-6	131	1.46	1.1E+03	2.42	1.3E+02	5.8E+01	9.1E-03
Chloroform	67-66-3	119	1.48	8.2E+03	1.97	3.1E+01	1.5E+02	2.9E-03
AROMATICS								
Benzene	79-01-6	78	0.88	1.8E+03	2.13	9.7E+01	9.5E+01	5.5E-03
Chlorobenzene	108-90-7	113	1.11	4.7E+02	2.84	3.3E+02	1.2E+01	3.5E-03
Ethylbenzene	100-41-4	106	0.87	1.5E+02	3.15	1.1E+03	7.0E+00	6.4E-03
Toluene	108-88-3	92	0.87	5.4E+02	2.73	3.0E+02	2.8E+01	5.9E-03
Xylene (mixed)	1330-20-7	106	0.84	2.0E+02	3.26	2.4E+02	1.0E+01	7.0E-03
POLYNUCLEAR AROMATIC HYDROCARBONS								
Acenaphthene	83-32-9	154	1.02	3.4E+00	4.00	4.6E+03	1.6E-03	9.2E-05
Acenaphthylene	208-96-8	152	0.90	3.9E+00	3.70	2.5E+03	2.9E-02	1.5E-03
Anthracene	120-12-7	178	1.28	4.5E-02	4.45	1.4E+04	2.0E-04	1.0E-03
Benzo(a)Anthracene	56-55-3	228	1.11	5.7E-03	5.60	1.4E+06	2.2E-06	1.2E-06
Benzo(b)Fluoranthene	205-99-2	252	-	1.4E-02	6.06	5.5E+05	5.0E-07	1.2E-05
Benzo(g,h,i)Perylene	191-24-2	278	-	7.0E-04	6.51	1.6E+08	1.0E-10	5.3E-08
Benzo(a)Pyrene	50-32-8	252	1.11	1.2E-03	6.06	5.5E+06	5.6E-09	1.6E-06
Chrysene	218-01-9	228	1.27	1.8E-03	5.61	2.0E+05	6.3E-09	1.1E-06
Fluoranthene	206-44-0	202	1.25	2.1E-01	4.90	3.8E+04	5.0E-06	6.5E-06

Table 4 (Continued)
Chemical-Specific Toxicity Values
Inhalation Exposures

Chemicals or Chemicals	Inhalation Route (SF) by day/yr	Wt of ex	Reference Conc. (RUC) mg/m ³	Inhalation RfD Converted from RUC mg/kg day	R o f	Ref. Date	Value Mammals Rate	Target Organ or System
1,1-Dichloroethane	9.1E-02	B2		2.9E-03	H	05/02/94	1.00E+00	cardiovascular system
Acetone						05/02/94	1.00E+00	
Chlorobenzene			2E-02	5.7E-03	H	05/02/94	1.00E+00	liver, kidney
Chloroform	8.1E-02	B2			H/I	05/02/94	1.00E+00	liver
Chloroethane	6.3E-03	C			H	10/15/93	1.00E+00	kidney
Ethylbenzene			1E+00	2.9E-01	I	05/02/94	1.00E+00	developmental toxicity
Methylene Chloride	1.6E-03	B2	3E+00	8.6E-01	H	05/02/94	1.00E+00	lung, liver / NA
Styrene	2.0E-03	B2	1E+00	2.9E-01	H	05/02/94	1.00E+00	liver, CNS
Tetrachloroethane	1.5E-03	B2			H	05/02/94	1.00E+00	liver, liver
Toluene		D	4E-01	1.1E-01	I	05/02/94	1.00E+00	CNS, eye, nose
Trichloroethane	4.0E-03	B2			H	10/15/93	1.00E+00	lung
Xylene (m-xyl)			3E-01	8.6E-02	H	05/02/94	1.00E+00	CNS, nose, throat
2,1,7,3-Tetra-CDD	1.5E+03	B2			H	10/15/93	1.00E-01	several
2,3,7,8-Tetra-CDD		B2				05/02/94	1.00E-01	NA
Chlorobenzene						05/02/94	1.00E-01	
Dibenzodioxin						05/02/94	1.00E-01	
Dibenzofuran						05/02/94	1.00E-01	
Di-n-Butylphthalate						05/02/94	1.00E-01	
Di-n-Octyl Phthalate						05/02/94	1.00E-01	
Isophorone		C				05/02/94	1.00E-01	NA
N-Nitrosodiphenylamine (I)						05/02/94	1.00E-01	
Phenol						05/02/94	1.00E-01	
4,4'-DDD					H	05/02/94	1.00E-01	NA
4,4'-DDE		B2			H	05/02/94	1.00E-01	liver
4,4'-DDT	3.4E-01	B2			I	05/02/94	1.00E-01	liver
Aldrin	1.7E+01	B2			I	05/02/94	1.00E-01	NA
Alpha-BHC	6.3E+00	B2			I	05/02/94	1.00E-01	liver
Alpha-Chloroethane	1.3E+00	B2			H	05/02/94	1.00E-01	NA
Aroclor-1248					H	05/02/94	1.00E-01	liver
Delta-BHC						05/02/94	1.00E-01	
Dieldrin	1.6E+01	B2			H	05/02/94	1.00E-01	liver
Endosulfan II							1.00E-01	
Endosulfan Sulfate							1.00E-01	
Endrin						05/02/94	1.00E-01	
Endrin Ketone							1.00E-01	
Gamma-Chloroethane	1.3E+00	B2			I	05/02/94	1.00E-01	liver
Hepachlor	4.5E+00	B2			H/I	05/02/94	1.00E-01	liver
Hepachlor Epoxide	9.1E+00	B2			H/I	05/02/94	1.00E-01	liver
Methoxychlor						05/02/94	1.00E-01	

Table 4 (Continued)
Chemical-Specific Toxicity Values
Dermal Exposures

Contaminant or Chemical	Dermal Exposure						R e- f
	Oral Absorption Efficiency percent	Oral Absorption Efficiency Reference	Dermal Extrapolated Reference Dose (RfD) mg/kg day	Dermal Extrapolated Shape Factor (SF) kg day/mg	Perme- ability Constant K _p cm/hr	Skin Absorp- tion Factor (unitless)	
1,1-Dichloroethane	1.0E+01	ATSDR, 1988	3.0E-03	9.1E-01	9.7E-03	2.3E-01	B
Aroclor	1.1E+01	ATSDR, 1989	6.2E-03		4.0E-02	2.5E-01	B
Chlorobenzene	1.0E+01	ATSDR, 1987	1.0E-01	4.1E-03	9.0E-03	2.5E-01	B
Chloroform				2.6E-01	4.9E-03	2.5E-01	B
Chloromethane	9.2E+01	ATSDR, 1989	9.2E-01		1.4E+00	2.5E-01	A
Ethylbenzene	1.3E+01	ATSDR, 1987	3.3E-02	1.4E-02	5.1E-03	2.5E-01	B
Methylene Chloride			1.0E-02		6.7E-01	2.5E-01	A
Styrene	1.0E+02	ATSDR, 1987	1.0E-02	3.2E-02	4.5E-02	2.5E-01	B
Tetrahydrofuran			1.0E-02		1.0E+00	2.5E-01	A
Toluene	9.0E+01	ATSDR, 1988	9.9E-03	1.1E-02	1.6E-02	2.5E-01	B
Trichloroethane	9.2E+01	ATSDR, 1989	1.0E+00		5.5E-04	2.5E-01	B
Xylene (mixed)	6.7E+01	ATSDR, 1989		1.7E+03	3.5E-01	1.0E-01	B
2,3,7,8-Tetra-CDD			1.0E-03	2.5E-01	3.2E-03	1.0E-01	B
2,3,7,8-Tetra-CDF						1.0E-01	B
Chlorobenzene			4.0E-02		1.3E-02	1.0E-01	B
Diethylphthalate	9.7E+01	ATSDR, 1989	9.7E-02		1.9E+00	1.0E-01	B
Di-n-butylphthalate			1.0E-03			1.0E-01	B
Di-n-Octyl Phthalate			1.0E-02	1.9E-02	4.9E-03	1.0E-01	B
Isophorone				9.0E-02	4.7E-04	1.0E-01	B
N-Nitrosodiphenylamine(1)	Unknown	ATSDR, 1987	3.0E-02		8.2E-03	1.0E-01	A
Phenol				4.0E+00	2.1E-01	1.0E-01	B
4,4'-DDD				6.0E+00	1.0E-01	1.0E-01	B
4,4'-DDE			2.5E-03	6.0E+00	3.1E-01	1.0E-01	B
4,4'-DDT	Unknown	ATSDR, 1987	1.5E-06	3.0E+02	1.5E-03	1.0E-01	B
Alkyl				1.3E+02		1.0E-01	B
Alpha-BHC			3.0E-06	2.6E+01	3.6E-02	1.0E-01	B
Alpha-Chloroethane					8.0E+00	2.5E-02	B
Aroclor-1248	9.0E+01	ATSDR, 1987				5.0E-02	B
Delta-BHC						1.0E-01	B
Dieldrin	Unknown	ATSDR, 1987	2.5E-06	3.2E+02	1.1E-02	1.0E-01	B
Endosulfan II						1.0E-01	B
Endosulfan Sulfate						1.0E-01	B
Endrin	Unknown	ATSDR, 1989	1.5E-05		1.3E-02	1.0E-01	B
Endrin Ketone						1.0E-01	B
Gamma-Chloroethane			3.0E-06	2.6E+01	3.6E-02	1.0E-01	B
Heptachlor	1.0E+02	ATSDR, 1987	5.0E-04	4.5E+00	9.4E-03	1.0E-01	B
Heptachlor Epoxide	1.0E+02	ATSDR, 1987	1.3E-03	9.1E+00		1.0E-01	B
Heptachlor Chloride			2.5E-04			1.0E-01	B

Table 5
Computation of Daily Intake Values From Maximum Habitat Concentrations

Compound	Maximum Concentration(mg/kg)				Daily Intake(mg/kg/day)			
	OWWH	FWH	SSWH	OFTH	OWWH	FWH	SSWH	OFTH
Acetone	0.0295	0.0295	0.044	0.025	0.0003	0.0003	0.00044	0.00025
Barium	108	108	95.1	108	1.08	1.08	0.951	1.08
Benzo(a)Anthracene	0.37	0.37	0.2	6	0.0037	0.0037	0.002	0.06
Benzo(a)Pyrene	0.52	0.2	0.2	6	0.0052	0.002	0.002	0.06
Benzo(b)Fluoranthene	1.2	0.2	0.97	6	0.012	0.002	0.0097	0.06
Beryllium	0.3	0.69	0.57	0.57	0.003	0.0069	0.0057	0.0057
Cadmium	1.1	0.21	0.21	1.1	0.011	0.0021	0.0021	0.011
Chlordane(total)	0.0053	0.001	0.13	5.7	0.00005	0.00001	0.0013	0.057
Chromium	13.2	11	19.3	26.2	0.132	0.11	0.193	0.262
Chrysene	0.365	0.2	0.2	6	0.00365	0.002	0.002	0.06
Dibenzo(a,h)anthracene	0.305	0.2	0.2	6	0.00305	0.002	0.002	0.06
Indeno(1,2,3-cd)pyrene	0.81	0.2	0.2	6	0.0081	0.002	0.002	0.06
Manganese	306	792	972	685	3.06	7.92	9.72	6.85

OWWH = Open Water Wetland Habitat SSWH = Scrub-Shrub Wetland Habitat

FWH = Forested Wetland Habitat OFTH = Old Field Terrestrial Habitat

Daily Intake = (Maximum Concentration, mg/kg) x (0.001 kg/day)/(1 kg)

Table 6
Determination of Ecological Hazard Indices for the Habitats of Concern

Compound	Appendix O		Ecological Screening Level (mg/kg/day)	Daily Intake(mg/kg/day)				Hazard Indices (HI)			
	Daily Intake Rate (mg/kg/day)			OWWH	FWH	SSWH	OFTH	OWWH	FWH	SSWH	OFTH
	LOAEL	NOAEL									
Acetone	500	0.166 0.01	500000	0.0003	0.0003	0.00044	0.00025	6E-10	6E-10	9E-10	5E-10
Barium	5.1		5100	1.08	1.08	0.951	1.08	0.00021	0.00021	0.0002	0.00021
Benzo(a)Anthracene	2		2000	0.0037	0.0037	0.002	0.06	2E-06	2E-06	1E-06	0.00003
Benzo(a)Pyrene	0.002		2	0.0052	0.002	0.002	0.06	0.0026	0.001	0.001	0.03
Benzo(b)Fluoranthene	40		40000	0.012	0.002	0.0097	0.06	3E-07	5E-06	2E-07	2E-06
Beryllium			16.6	0.003	0.0069	0.0057	0.0057	0.00018	0.00042	0.0003	0.00034
Cadmium			1	0.011	0.0021	0.0021	0.011	0.011	0.0021	0.0021	0.011
Chlordane(total)	0.273		273	0.00005	0.00001	0.0013	0.057	2E-07	4E-06	5E-06	0.00021
Chromium	2.4		2400	0.132	0.11	0.193	0.262	0.00006	0.00005	8E-05	0.00011
Chrysene	99		99000	0.00365	0.002	0.002	0.06	4E-06	2E-06	2E-06	6E-07
Dibenzo(a,h)anthracene	0.006		6	0.00305	0.002	0.002	0.06	0.00051	0.00033	0.0003	0.01
Indeno(1,2,3-cd)pyrene	72		72000	0.0061	0.002	0.002	0.06	1E-07	3E-06	3E-06	8E-07
Manganese	0.06	60	3.06	7.92	9.72	6.85	0.051	0.132	0.162	0.11417	
Total HI							0.07	0.14	0.17	0.17	

OWWH Open Water Wetland Habitat

SSWH = Scrub-Shrub Wetland Habitat

FWH = Forested Wetland Habitat

OFTH = Old Field Terrestrial Habitat

Ecological Screening Criteria = (LOAEL, mg/kg/day) x (1000) or (NOAEL, mg/kg/day) x (100)

Hazard Index = (Daily Intake, mg/kg/day)/(Ecological Screening Criteria, mg/kg/day)

2-20

^aUSEPA OSWER Directive #9355.4-02 Memorandum, Interim Guidance on Establishing Soil Lead Cleanup Levels at Superfund Sites, 1989.

****MDEQ, MERA Interoffice Communication Operational Memorandum #14, (Revision 2), Remedial Action Plans using Generic Industrial or Generic Commercial Cleanup Criteria, June 5, 1995.**

[REDACTED] = chosen cleanup goal for each chemical of concern

APPENDIX B

**STATEMENT OF WORK FOR THE REMEDIAL ACTION
AT THE ORGANIC CHEMICAL SITE
KENT COUNTY, MICHIGAN**

I. PURPOSE

The purpose of this Statement of Work (SOW) is to set forth requirements for implementation of the groundwater remedial action set forth in the Record of Decision (ROD), which was signed by the Superfund Division Director of U.S. EPA Region V on February 5, 1997, for the Organic Chemical Site (Site), hereinafter referred to as the "Remedial Action". The Settling Defendants¹ shall follow the ROD, the SOW, the approved Remedial Action Work Plan, U.S. EPA Superfund Remedial Design and Remedial Action Guidance and any additional guidance provided by U.S. EPA in submitting deliverables for designing and implementing the remedial action at the Organic Chemical Site. This SOW is Appendix B to the Consent Decree and its provisions are fully enforceable under the Consent Decree.

II. DESCRIPTION OF THE REMEDIAL ACTION

The major components of the Remedial Action are:

A. Operation and maintenance (O&M) of a groundwater extraction and treatment unit until the Performance Standards set forth in Table 1 are achieved and maintained at the Point of Compliance.

1. The Point of Compliance is throughout the contaminated groundwater plume, i.e., all groundwater monitoring wells identified by EPA in the approved Remedial Action Work Plan.

2. Treatment of extracted groundwater so as to comply with discharge limits and requirements established by Michigan DEQ pursuant to MAC, R323.2102-2189 and set forth in the Substantive Requirements Document (incorporated as Attachment 1 to this SOW), prior to discharge to Roy's Creek.

3. Management and disposal of treatment residuals from the groundwater treatment system in accordance with the substantive requirements of RCRA generator and temporary storage regulations and land disposal restrictions, 40 CFR Parts 262 and 268 and MAC, R299.9601-1107.

¹The term "Settling Defendants," as used in this document, refers to the "Performing Settling Defendants," under the Consent Decree.

4. Enforceable land use restrictions or other institutional controls, as necessary to prevent exposure to groundwater contaminants exceeding Performance Standards as set forth in Table 1. All deed restrictions shall run with the land. The deed restrictions shall remain in full force and effect until the Certification of Completion of the Work has been issued by EPA to the Settling Defendants pursuant to Paragraph 48 of the Consent Decree.

5. Implementation of a groundwater monitoring program, as more specifically described in Section III.G, below.

B. An alternate Point of Compliance ("APC") beyond the OCI property boundary may be established if the Settling Defendants submit to EPA, and EPA approves, a demonstration that:

1) Concentrations of groundwater contaminants listed in Table 1 are decreasing as a result of natural attenuation;

2) Enforceable land use restrictions or other institutional controls are in place for the OCI property and adjacent properties to the extent necessary to prevent exposure to ground water contaminants exceeding the Performance Standards set forth in Table 1. All deed restrictions shall run with the land. The deed restrictions shall remain in full force and effect until the Certification of Completion of the Work has been issued by EPA to the Settling Defendants pursuant to Paragraph 48 of the Consent Decree.

3) A groundwater monitoring program will be implemented that is adequate to determine if natural attenuation of the contaminant plume is continuing and if the Performance Standards set forth in Table 1 are attained and maintained at or beyond the APC. Groundwater monitoring shall be required to demonstrate continuing natural attenuation, until the Performance Standards in Table 1 are attained throughout the contaminated groundwater plume.

4) The APC remedial action will meet the substantive requirements of MAC Part 201, including the following: R299.5705(5), R299.5705(6), Sections 20118(6b), 6(d), (8), (10) and (11); is consistent with the NCP; and follows U.S. EPA OSWER Directive No. 9200.4-17 on use of Monitored Natural Attenuation at Superfund Sites and other appropriate guidance.

If an APC is approved by EPA, operation of a groundwater extraction and treatment system (either the existing or a modified system) will not be required if and so long as the Performance Standards set forth in Table 1 are achieved and maintained at or beyond the APC, and natural attenuation of the contaminants listed in Table 1 is continuing. However, the groundwater extraction and treatment system will remain in place and operational, and groundwater monitoring will continue, until the Performance Standards in Table 1 are achieved throughout the contaminated plume and Certification of Completion of the Work has been issued by EPA to the Settling Defendants pursuant to Paragraph 48 of the Consent Decree. A Post Shutdown Maintenance Program shall be implemented to maintain the groundwater extraction and treatment system in an operational state during all periods the system is shut

down until the Certification of Completion of the Work has been issued by EPA, or such earlier date as permitted by EPA pursuant to Section III.E.6 below. If EPA determines, based on groundwater monitoring data, that natural attenuation is no longer occurring, EPA may require re-startup of the groundwater extraction and treatment system pursuant to Section III.D. of this SOW.

III. IMPLEMENTATION OF THE REMEDIAL ACTION

The Settling Defendants shall perform the following actions to implement the Remedial Action and to meet Performance Standards. Performance Standards shall include cleanup standards, standards of control, quality criteria and other substantive requirements, criteria or limitations including all Applicable or Relevant and Appropriate Requirements (ARARs) set forth in this SOW.

A. Remedial Action Work Plan

Within sixty (60) days after issuance of the Notice to Proceed, Settling Defendants shall submit to EPA for approval a Remedial Action Work Plan.

1. If the Settling Defendants do not submit an APC Demonstration Plan as part of the Remedial Action Work Plan, the Remedial Action Work Plan shall include the elements set forth in Section IV, Tasks 1 and 3 of this SOW and the following:

a) a plan for upgrading the existing groundwater extraction and treatment system to ensure that the system's performance in achieving Performance Standards is maximized, and that discharge of the treated groundwater to Roy's Creek will be in compliance with the Substantive Requirements Document.

b) Schedule for implementation of Remedial Action tasks.

2. If the Settling Defendants do submit an APC Demonstration Plan, the initial submittal of the Remedial Action Work Plan need not include a draft O&M Plan (Task 3), or a plan for upgrading the groundwater extraction and treatment system, but shall include the other elements specified in Subparagraph 1 above.

B. APC Demonstration Plan

An APC Demonstration Plan shall include the following elements:

1. Post Shutdown Groundwater Monitoring Plan sufficient to document whether concentrations of hazardous substances in the groundwater plume emanating from the OCI property are decreasing due to natural attenuation. The groundwater monitoring program will meet the requirements of Paragraph III.G of this Section.

2. Proposed Institutional Controls to prevent exposure to groundwater contaminants exceeding the Performance Standards set forth in Table 1 at or beyond the APC;

3. Proposed maintenance program for the existing groundwater extraction and treatment system "Post Shutdown Maintenance Plan."

C. APC Demonstration

If EPA approves the APC Demonstration Plan, Settling Defendants shall conduct the APC demonstration in accordance with the requirements and schedule set forth in the approved APC Demonstration Plan. The APC Demonstration Plan, as part of the approved Remedial Action Plan, shall be enforceable under the Consent Decree.

1. During the APC demonstration period, the Settling Defendants shall maintain the existing groundwater extraction and treatment system in accordance with the approved Post Shutdown Maintenance Plan.

2. The APC demonstration will include collection of ground water monitoring data in accordance with the approved Post Shutdown Monitoring Plan for two years following approval of the APC Demonstration Plan.

3. Within sixty (60) days following the final round of groundwater sampling pursuant to the approved APC Demonstration Plan, the Settling Defendants shall submit to EPA for approval:

a) a report ("APC Demonstration Report") summarizing the monitoring data and other information that the Settling Defendants contend supports the approval of an APC for the Remedial Action. The report shall also discuss the steps the Settling Defendants have taken to obtain deed restrictions on use of groundwater for the OCI property and adjoining properties under which is located contaminated groundwater exceeding the Performance Standards in Table 1.

b) Proposed changes to the Post Shutdown Groundwater Monitoring Plan, if necessary, to adequately monitor natural attenuation of contaminants within the groundwater plume.

EPA will review the APC Demonstration Report and final Post Shutdown Groundwater Monitoring Plan in accordance with Section XI of the Consent Decree, except that if EPA disapproves the APC Demonstration on the ground that it fails to demonstrate natural attenuation of the contaminants listed in Table 1, such disapproval shall not subject Settling Defendants to stipulated penalties under the Consent Decree.

4. If EPA approves the APC demonstration, Settling Defendants shall thereafter perform monitoring of groundwater in accordance with the approved Post Shutdown Groundwater Monitoring Plan.

5. If EPA disapproves the APC demonstration, Settling Defendants shall submit an Addendum to the Remedial Action Work Plan within thirty (30) days of such disapproval. The Work Plan Addendum shall include:

a) a plan for upgrading the existing groundwater extraction and treatment system to ensure that the system's performance in attaining Performance Standards is maximized, and that discharge of the treated groundwater to Roy's Creek will be in compliance with the Substantive Requirements Document.

b) Draft O&M Plan that includes the elements set forth in Section IV, Task 3.

c) Groundwater Monitoring Program that meets the requirements of Section III.G below.

EPA's review of the Addendum to the Remedial Action Work Plan shall be in accordance with Section XI of the Consent Decree. Upon approval of the Addendum to the Remedial Action Work Plan, Settling Defendants shall implement the actions required thereunder in accordance with the schedule set forth therein. The Addendum to the Remedial Action Plan shall be incorporated into the Consent Decree and shall be fully enforceable thereunder.

D. APC EXCEEDANCE OR CESSATION OF NATURAL ATTENUATION

Following approval of an APC for the Remedial Action, if post-shutdown groundwater monitoring indicates that the 95% one-sided confidence interval of any contaminant's concentration (the mean plus 1.6 times the standard error of the data) at any selected APC compliance monitoring point has increased above the Performance Standard for such contaminant listed in Table 1, or if EPA determines, based on monitoring data for at least four (4) consecutive quarters, that natural attenuation of contaminants has ceased, within thirty (30) days following the sampling event in question or within 30 days following EPA's written notice to Settling Defendants of its determination that natural attenuation has ceased, the Settling Defendants shall submit to EPA:

(1) a written assessment of the cause of the Performance Standard EXCEEDANCE or the cessation of natural attenuation, and

(2) an addendum to the Remedial Action Plan proposing additional remedial actions in order to (a) re-establish compliance with the Perform Standard(s) at the APC, or (b) implement reductions in concentrations of the contaminants listed in Table 1 in order to achieve Performance Standards throughout the plume. If the proposed remedial action is to restart the groundwater extraction and treatment system, the addendum to the Remedial Action Plan shall include the elements set forth in Paragraph C.5 of this Section.

If all Performance Standards except that for benzene have been achieved at a particular APC compliance monitoring point, the Performance Standards shall be deemed to be satisfied at that particular compliance monitoring point.

EPA will review the Addendum to the Remedial Action Workplan in accordance with Section XI of the Consent Decree. Upon EPA approval or modification of the Addendum, Settling Defendants shall implement the actions required thereunder in accordance with the schedule set forth therein. The Addendum to the Remedial Action Plan shall be incorporated into the Consent Decree and shall be fully enforceable thereunder.

E. OPERATION AND MAINTENANCE OF THE EXISTING GROUNDWATER EXTRACTION AND TREATMENT SYSTEM

If Settling Defendants are required to operate and maintain the existing groundwater extraction and treatment system pursuant to Paragraph A.1, C.5 or D of this Section, the system must be upgraded to ensure that it will effectively capture the contaminants that exceed the Performance Standards listed in Table 1 and remove such chemicals from extracted groundwater prior to discharge. The Settling Defendants shall properly discharge treated water to Roy's Creek in accordance with the Substantive Requirements Document, which has been issued to the PRPs in place of a National Pollution Discharge Elimination System Permit. The Substantive Requirements Document is Attachment 1, to this SOW, and its requirements are fully enforceable under the Consent Decree.

1. Treatment Process Residuals

Treatment process residuals shall be handled in accordance with all ARARs pertaining to the residuals, as defined in the ROD and this SOW. To the extent the spent carbon from the water and air treatment systems is a RCRA hazardous waste, it must be handled as a RCRA hazardous waste and either treated in accordance with the Land Disposal Restrictions prior to disposal, regenerated in a unit which has been approved for use at the Site by U.S. EPA after opportunity for comment by MDEQ, or regenerated off-Site at a facility in compliance with RCRA regulations for Miscellaneous Units, as set forth in 40 CFR Part 264 Subpart X. Any other treatment residuals must be handled accordingly.

2. Correction of Deficiencies

If the groundwater monitoring program indicates that insufficient water is being withdrawn by the extraction system so that (a) groundwater contaminant concentrations in the leading edge of the plume are not decreasing, or (b) groundwater contaminant concentrations are not decreasing at the rate necessary to achieve Performance Standards within 30 years, or too much water is being extracted such that adverse hydrologic consequences (such as lowering the water table) are occurring, the U.S. EPA, after opportunity for comment by the MDEQ, may require that a combination of additional groundwater extraction wells and/or an increased or decreased pumpage rate may be required to correct any deficiencies. Upon determination of a

deficiency, Settling Defendants shall submit a workplan for the additional response actions no later than 60 days after receipt of written notice from U.S. EPA. Upon approval of the workplan, the Settling Defendants shall implement the workplan in accordance with the schedule contained therein.

If any of the wells are destroyed or in any way becomes unusable, the Settling Defendants shall repair or replace each such well. The location of any additional wells installed pursuant to Consent Decree or this SOW shall be approved by the U.S. EPA, after consultation with the Settling Defendants.

3. Operational Time Period

The Settling Defendants shall continuously operate the groundwater extraction and treatment system until a petition to cease operation of such system is approved by the U.S. EPA, after opportunity for comment by the MDEQ. Any petition to cease operation of the groundwater extraction and treatment system shall include documentation showing that the Performance Standards in Table I have been continuously achieved at the applicable point of compliance for at least 24 months during operation of the groundwater extraction wells and for at least 1 month following a temporary shut-in of the extraction wells as described below. During the 24-month period, Settling Defendants shall collect groundwater samples on a quarterly basis from all extraction and monitor wells included in the approved Post Shutdown Groundwater Monitoring Plan. Groundwater samples collected during the 24-month period shall be analyzed for all hazardous substances, pollutants, and contaminants on the Target Compound List (TCL) and the Target Analyze List (TAL).

The petition to cease operation of the groundwater extraction system shall include monitoring of the water quality in the aquifer after pumping from the extraction wells has been temporarily stopped. This temporary shut-in of the extraction wells shall be sufficiently long as is necessary to allow the 3-dimensional groundwater flow system and chemical equilibrium to return to the steady-state condition which existed prior to groundwater remediation and which will exist when groundwater remediation has ceased. It is assumed that the hydraulic steady state will be reached within 72 hours after stopping the extraction wells. The additional shut-in time necessary to achieve chemical equilibrium within the groundwater system is uncertain. At a minimum, a series of samples taken from the extraction wells at time-after-shut-in intervals of 1 hour, 1 day, 1 week, and approximately 1 month are required. Also, a round of samples from the selected groundwater monitoring wells shall be taken at the time the last time-after-shut-in samples are taken from the extraction wells (i.e., 28 to 30 days after shut-in). The Settling Defendants shall maintain the temporary shut-in of the extraction wells for no more than 30 days. During that time period, the Settling Defendants shall have already completed this sampling and the Settling Defendants shall restart the groundwater extraction and treatment system and continue its operation until a petition to cease operation is approved by U.S. EPA.

All petitions to cease operation of the groundwater extraction and treatment system shall include: (i) the results of analyses of all groundwater samples collected during the 24-month period from each extraction and monitor well screened in the aquifer, (ii) the results of

groundwater samples taken during temporary shutdown of the extraction system as discussed in this Section; (iii) a proposed Post-Shutdown Monitoring Plan sufficient to document whether Performance Standards set forth in Table 1 continue to be met at the point of compliance and whether concentrations of hazardous substances within the groundwater plume are decreasing due to natural attenuation, and (iv) any other information that U.S. EPA requires.

4. Post-Shutdown Monitoring

After discontinuing operation of the groundwater extraction and treatment system pursuant to Section III.E.3 above, the Settling Defendants shall thereafter perform monitoring of groundwater in accordance with provisions of the approved Post Shutdown Monitoring Plan. Such monitoring shall continue for at least five years, until the Settling Defendants demonstrate that the Performance Standards established in Table 1 have been achieved and maintained throughout the contaminated groundwater plume.

5. Restart

If during the post-shutdown monitoring period, any groundwater monitoring indicates that the 95% one-sided confidence level of any contaminant's concentration (the mean plus 1.6 times the standard error of the data) at any selected monitoring point has increased above the Performance Standard for such contaminant after groundwater extraction and treatment has been terminated in accordance with subparagraph 3 above, the Settling Defendants shall restart the groundwater extraction and treatment system until they again demonstrate compliance with the Performance Standard as provided in Section III.E.3 and as set forth in the Consent Decree. At such time, Settling Defendants may re-petition to cease operation of the groundwater extraction and treatment system pursuant to Subparagraph 3 above, and after discontinuation of the system, post-shutdown ground water monitoring shall be conducted as set forth in subparagraph 4 above.

6. Permanent Shut down of Groundwater Extraction and Treatment System.

Settling Defendants may permanently shut down the groundwater extraction and treatment system upon receipt from EPA of a Certification of Completion of the Work pursuant to Paragraph 48 of the Consent Decree; however, EPA may agree to a permanent shutdown prior to issuing the Certification of Completion of Work if it can determine conclusively that the Performance Standards in Table 1 will be attained throughout the plume within a reasonable time as a result of continuing natural attenuation.

F. COMPLETION OF REMEDIAL ACTION

The Remedial Action shall be deemed completed when the Performance Standards set forth in Table 1 have been achieved throughout the contaminated groundwater plume, and EPA has issued its Certification of Completion of the Remedial Action pursuant to Section 47 of the Consent Decree. Settling Defendants shall continue groundwater monitoring thereafter to

verify that the Performance Standards shall be maintained in the long term. If operation of a groundwater extraction and treatment system is required to attain the Performance Standards, such monitoring shall be required for five years following attainment of the Standards. If attainment of the Performance Standards is the result of natural attenuation, as permitted under the approved Remedial Action Work Plan, such monitoring shall be required for two years following attainment or as approved by EPA in the Post Shutdown Groundwater Monitoring Plan.

G. REQUIREMENTS FOR GROUNDWATER MONITORING PROGRAMS

The Settling Defendants shall design any groundwater monitoring program required under the Consent Decree and this SOW to detect changes in the chemical concentration of the groundwater at the Organic Chemical Site. The groundwater monitoring program shall include collection and field and laboratory analysis of samples from the monitoring wells approved as part of the plan.

a. Groundwater Monitoring Locations

The Settling Defendants shall collect and analyze groundwater sample from each of the monitoring wells selected by U.S. EPA. The monitoring well locations and extraction well will be selected by U.S. EPA, in consultation with MDEQ, and shall be specified in the Remedial Action Work Plan or any addendum thereto, or approved Post Shutdown Groundwater Monitoring Plan. Additional monitor wells may be proposed by Settling Defendants to facilitate the monitoring requirements.

b. Groundwater Monitoring Frequency

The U.S. EPA, after opportunity for comment by MDEQ, shall determine the need for additional groundwater monitoring every five (5) years after the commencement of monitoring. This determination shall be based upon whether the Performance Standards in Table 1 have been met and whether additional groundwater work shall be required to reach Performance Standards throughout the contaminated groundwater plume.

c. Groundwater Monitoring Analyses

The Settling Defendants shall perform field analyses, including groundwater elevation, Ph, temperature, and specific conductivity, and laboratory analyses for the compounds to be determined. If additional information indicates that the groundwater sampling program is not adequately monitoring the contaminant plume to determine that natural attenuation is occurring, or that there are additional chemical parameters exceeding ARARs (except for pesticides and/or PAHs), the U.S. EPA, after opportunity for comment by the MDEQ, may require that additional groundwater monitor wells or sampling parameters be added to the regular sampling program.

H. MODIFICATIONS TO SOW OR WORKPLANS

If EPA determines that a modification to the SOW or related work Plan is necessary to achieve and maintain the Performance Standards or to carry out and maintain the effectiveness of the remedy set forth in the ROD, EPA may require that such modification be incorporated in this SOW and/or such work plan pursuant to Paragraph 12 of the Consent Decree.

IV. SCOPE OF THE REMEDIAL ACTION

The Remedial Action shall consist of three tasks. All plans are subject to EPA approval.

Task 1: RA Work Plan

- A. Site Access
- B. Quality Assurance and Quality Control
- C. Site Health and Safety Plan
- D. Sampling Plan
- E. APC Demonstration Plan (at Settling Defendants' option)
- F. O&M Plan (if APC Demonstration Plan not submitted)

Task 2: Reports and Submissions

- A. Progress Reports during RA and O&M
- B. Notification of Completion of Construction Report (if remedial action construction required under the Consent Decree or this SOW)
- C. Completion of Remedial Action Report
- D. Completion of Work Report

Task 3: Operation and Maintenance

Task 1: Remedial Action (RA) Work Plan

The Settling Defendants shall submit a Work Plan which shall document the overall management strategy for performing the operation, maintenance and monitoring of Remedial Actions for U.S. EPA review and approval. The plan shall document the responsibility and authority of all organizations and key personnel involved with the implementation, and shall include a description of qualifications of key personnel directing the Remedial Action, including contractor personnel. The Settling Defendants shall submit a draft Remedial Action Work Plan according to the schedule identified in the Consent Decree and Part V below. The Settling Defendants shall submit a final Remedial Action Work Plan incorporating U.S. EPA's comments on the Draft Work Plan according to Section XI of the Consent Decree. The RA Work Plan shall include the following:

- A. Site Access

A Site-specific plan for obtaining access agreements and restrictive covenants required to implement the remedial design and remedial action shall be developed by the Settling Defendants as required under Section IX of the Consent Decree unless already obtained. The plan shall detail the steps necessary for Settling Defendants to obtain all necessary access agreements and restrictive covenants prior to the initiation of remedial action. Site access to a portion of the Site shall extend for the duration of the cleanup and any maintenance and post-certification monitoring for that portion and shall include allowances for oversight by U.S. EPA and MDEQ and their contractors, agents and consultants in accordance with Section IX of the Consent Decree.

B. Quality Assurance and Quality Control

The Settling Defendants shall develop a site specific Quality Assurance Project Plan (QAPP), based upon the Consent Decree, Section VIII , and guidance provided by U.S. EPA. The QAPP shall at a minimum include:

- o Project description
- o Project organization
- o Project responsibilities
- o Sampling and custody procedures
- o Calibration procedures
- o Quality assurance objectives
- o Analytical procedures
- o Data analysis and reporting
- o Internal QC checks
- o Performance and system audits
- o Preventative maintenance
- o Method specific procedures for assessing data precision, accuracy and completeness
- o Corrective actions
- o QA reports

The Settling Defendants shall participate in a Pre-QAPP meeting with the U.S. EPA Quality Assurance Section prior to preparation of any QAPP at the request of the RPM. The Settling Defendants shall submit a draft QAPP with the RA Work Plan. The Settling Defendants shall incorporate all required corrections in the final QAPP with the final RA Work Plan. The Settling Defendants shall propose in the RA Work Plan a schedule for submittal of any additional QAPPs for U.S. EPA's approval, after opportunity for comment by MDEQ.

C. Site Health and Safety Plan

The Settling Defendants shall develop a site safety plan which is designed to protect on-site personnel and area residents from physical, chemical and all other hazards posed by this remedial action. The safety plan shall develop the performance levels and criteria necessary to address the following areas.

- o General requirements
- o Personnel
- o Levels of protection
- o Safe work practices and safe guards
- o Medical surveillance
- o Personal and environmental air monitoring
- o Personal protective equipment
- o Personal hygiene
- o Decontamination - personal and equipment
- o Site work zones
- o Contaminant control
- o Contingency and emergency planning
- o Logs, reports and record keeping

The safety plan shall follow U.S. EPA guidance and all OSHA requirements as outlined in 29 CFR 1910. The Settling Defendants shall submit a draft safety plan for Agency review as part of the RA Work Plan submittal. The Settling Defendants shall incorporate all required corrections in the final safety plan. Document review shall be in accordance with Section XI of the Consent Decree.

D. Sampling Plan

The Settling Defendants shall develop a sampling and analysis plan (as described in "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA," October 1988) for any monitoring programs required by this SOW. The Settling Defendants shall submit the Sampling Plan addressing pre-design field activities with the draft RA Work Plan and shall propose in the RA Work Plan a schedule for submittal of any additional sampling plans.

TASK 2: Reports and Submissions

The Settling Defendants shall prepare plans, specifications, and reports as set forth in Tasks 1 and 3 to document the operation, maintenance, and monitoring of the Remedial Action. As directed by U.S. EPA, after opportunity for comment by MDEQ, the Settling Defendants shall finalize all submissions, incorporating U.S. EPA's comments received on the draft document submissions. Other documentation shall include, but not be limited to the following:

A. Progress REPORTS

Pursuant to Section X of the Consent Decree, the Settling Defendants shall provide U.S. EPA five (5) copies of signed periodic written progress reports documenting:

1. Activities taken to comply with the Consent Decree in the previous reporting period;
2. Results of sampling, tests, and all other data received by Settling Defendants and not previously submitted to U.S. EPA;
3. Identification of all work plans, plans and other deliverables required by this Consent Decree completed and submitted during the previous reporting period;
4. Description of all actions, including, but not limited to, data collection and implementation of work plans, which are scheduled for the next reporting period and other information relating to progress of construction;
5. Descriptions of any modifications to the work plans or other schedules that Settling Defendants have proposed to U.S. EPA or that have been approved by U.S. EPA;
6. Summaries of all contacts with representatives of the local community, public interest groups or State government during the reporting period or anticipated to be taken in the next reporting period;
7. Summaries of all problems or potential problems encountered during the reporting period, identifying those that have affected or may affect future schedules for implementation of the Work, and a description of efforts made to mitigate such delays or anticipated delays ;
8. Changes in personnel during the reporting period;
9. Completed work for previous reporting period and the projected work for the next ninety days with a schedule relating work to the overall project schedule for RD/RA completion.

Progress Reports shall be submitted on a quarterly basis during the APC demonstration period and during Post Shutdown Monitoring pursuant to Section III.C.4, III.E.4 and III.F (when groundwater monitoring is the only remedial activity being implemented pursuant to this Consent Decree and SOW). Such quarterly progress reports shall be due ten days following the end of each calendar quarter (i.e., April 10, July 10, October 10 and January 10).

Progress reports shall be submitted on a monthly basis during construction and operation of a groundwater extraction and treatment system or during construction and implementation of any remedial actions required under this Consent Decree and SOW in addition to groundwater monitoring. Such progress reports shall be submitted on the tenth day of every month following U.S. EPA's required submittal of any work plan or work plan addendum requiring construction and/or implementation of such remedial actions.

B. Completion of Remedial Action Report

Within 90 days after the Settling Defendants conclude that the Remedial Action has been fully performed and the Performance Standards have been attained throughout the plume, the Settling Defendants shall submit a written Completion of Remedial Action Report requesting certification to EPA for approval, with a copy to the State. The report shall include a discussion of the data supporting Settling Defendants request for Certification of Completion of the Remedial Action. In the report, a registered professional engineer and the Settling Defendants' Project Coordinator shall state the Remedial Action has been completed in full satisfaction of the requirements of this Consent Decree. The report shall contain the following statement, signed by a responsible employee of a Settling Defendant or the Settling Defendants' Project Coordinator:

"To the best of my knowledge, after thorough investigation, I certify that the information contained in or accompanying this submission is true, accurate and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

C. Completion of Work Report

This report shall be submitted by the Settling Defendants 90 days after all groundwater monitoring required to be performed after issuance of the Certification of Completion of the Remedial Action has been completed pursuant to this SOW and the approved Post Shutdown Groundwater Monitoring Plan, and the monitoring data demonstrates that the Performance Standards set forth in Table 1 have been maintained throughout the plume continuously throughout the Post Certification period.

In the report, a registered professional engineer and the Settling Defendants' Project Coordinator shall state the Work has been completed in full satisfaction of the requirements of this Consent Decree. The report shall contain the following statement, signed by a responsible corporate official of a Settling Defendant or the Settling Defendants' Project Coordinator:

"To the best of my knowledge, after thorough investigation, I certify that the information contained in or accompanying this submission is true, accurate and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

Task 3: Operation and Maintenance Plan for Groundwater Extraction and Treatment System

If required to operate the groundwater extraction and treatment system pursuant to the Consent Decree and this SOW, the Settling Defendants shall prepare an Operation and Maintenance

(O&M) Plan to cover both implementation and long term maintenance of the groundwater extraction and treatment system.² An initial Draft O&M Plan shall be submitted as an Addendum to the RA Work Plan required pursuant to Section III.C.5 of this SOW. The plan shall be composed of the following elements:

1. Description of normal operation and maintenance;
 - a. Description of tasks for operation;
 - b. Description of tasks for maintenance;
 - c. Description of prescribed treatment or operation conditions; and
 - d. Schedule showing frequency of each O&M task.
2. Description of potential operating problems;
 - a. Description and analysis of potential operation problems;
 - b. Sources of information regarding problems; and
 - c. Common and/or anticipated remedies.
3. Description of routine monitoring and laboratory testing;
 - a. Description of monitoring tasks;
 - b. Description of required data collection, laboratory tests and their interpretation;
 - c. Required quality assurance, and quality control;
 - d. Schedule of monitoring frequency and procedures for a petition to U.S. EPA to reduce the frequency of or discontinue monitoring; and
 - e. Description of verification sampling procedures if Cleanup or Performance Standards are exceeded in routine monitoring.
4. Description of alternate O&M;
 - a. Should systems fail, alternate procedures to prevent release or threatened releases of hazardous substances, pollutants or contaminants which may endanger public health and the environment or exceed performance standards; and
 - b. Analysis of vulnerability and additional resource requirement should a failure occur.
5. Corrective Action;

²Post shutdown maintenance of the groundwater extraction and treatment system pursuant to Section III.C.1 shall be performed in accordance with the approved Post Shutdown Maintenance Plan. Post shutdown groundwater monitoring pursuant to Section III.C.2 will be performed in accordance with the approved Post Shutdown Groundwater Monitoring Plan.

- a. Description of corrective action to be implemented in the event that cleanup or performance standards are exceeded; and
 - b. Schedule for implementing these corrective actions.
- 6. Safety plan;
 - a. Description of precautions, of necessary equipment, etc., for Site personnel; and
 - b. Safety tasks required in event of systems failure.
- 7. Description of equipment; and
 - a. Equipment identification;
 - b. Installation of monitoring components;
 - c. Maintenance of Site equipment; and
 - d. Replacement schedule for equipment and installed components.
- 8. Records and reporting mechanisms required.
 - a. Daily operating logs;
 - b. Laboratory records;
 - c. Records for operating costs;
 - d. Mechanism for reporting emergencies;
 - e. Personnel and maintenance records; and
 - f. Monthly/annual reports to Federal and State agencies.

IV. SUMMARY OF MAJOR DELIVERABLES/SCHEDULE

A summary of the project schedule and reporting requirements contained in this SOW is presented below:

SUBMISSION	DUE DATE
1. Remedial Action Work Plan	60 days after Notice to Proceed
2. APC Demonstration Report	60 days from final round of sampling in APC Demonstration Period
3. Post Shutdown Groundwater Monitoring Plan - III.C.3	60 days from final round of sampling in APC Demonstration Period
4. Addendum to Remedial Action Work Plan pursuant to III.C.5(a)	30 days from disapproval of APC Demonstration
5. O&M Plan - III.C.5(b)	30 days from disapproval of

APC Demonstration

- | | |
|--|--|
| 6. Addendum to Remedial Action Work Plan - III.D. | 30 days from sampling event showing exceedance of Performance Standard |
| 7. Work Plan for additional Response Actions - III.E.2 | 60 days after receipt of notice of deficiency |
| 8. Other modification to SOW or Related workplans - Paragraph 12 of CD | 60 days after receipt of notice of deficiency |
| 9. Progress Reports | 10th day of month, as applicable under Task 2 |
| 10. Oral report of release - Para. 30 of CD | 24 hours of event onset |
| 11. Written report of release - Para. 31 of CD | 20 days of event onset |
| 12. Establish financial assurance - Para.43 of CD | 30 days from entry of CD |
| 13. Secure comprehensive liability insurance - Section 57 of CD. | 15 days before commencing Onsite work |
| 14. Completion of Remedial Action Report | 90 days after Performance Standards attained |
| 15. Completion of Work Report | 90 days after all required Monitoring completed |

Table 1

PERFORMANCE STANDARDS

Vinyl Chloride	2 parts per billion (ppb)
1,2-Dichloroethane	5 ppb
1,1,1- Trichloroethane	200 ppb
Benzene	5 ppb
Toluene	1,000 ppb
Ethylbenzene	700 ppb
Xylene	10,000 ppb
Arsenic	50 ppb
Barium	2,000 ppb
Total Chromium	100 ppb
Copper	1,300 ppb
Lead	15 ppb
Mercury	2 ppb

ATTACHMENT 1

SUBSTANTIVE REQUIREMENTS DOCUMENT

MICHIGAN DEPARTMENT OF NATURAL RESOURCES
SUBSTANTIVE REQUIREMENTS DOCUMENT
FOR THE
ORGANIC CHEMICALS INC., SUPERFUND SITE

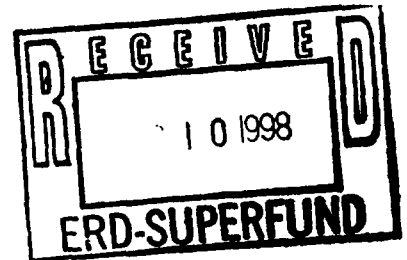
Authorization to (hereinafter referred to as the "discharger"):

Organic Chemicals, Incorporated Steering Committee
C/O Miller, Johnson, Snell and Cummiskey
800 Calder Plaza Building
Grand Rapids, Michigan 49503

for a discharge from a facility located at

Organic Chemicals, Inc.
3921 Chicago Drive SW
Grandville, Michigan 49468

designated as Organic Chemicals-SF Site

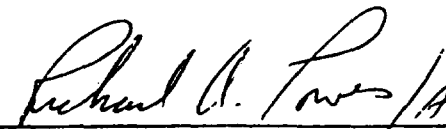


In accordance with Section 121(d) of the Comprehensive Environmental Response, Compensation, and Liability Act (42 U.S.C. 9601 et seq; "CERCLA") and the Superfund Amendments and Reauthorization Act (Public Law No. 99-499, "SARA") the Surface Water Quality Division of the Michigan Department of Natural Resources, in compliance with the provisions of the Federal Water Pollution Control Act, as amended, (33 U.S.C. 1251 et seq; the "Act"), and Michigan Act 245, Public Acts of 1929, as amended, (the "Michigan Act"), which are legally applicable or relevant and appropriate requirements (ARARs), herein establishes substantive requirements for a discharge of treated groundwater from the Organic Chemicals, Inc. Superfund Site to an unnamed tributary to the Grand River (Roy's Creek) in Section 8, T6N, R12W, Kent County.

These substantive requirements are based on information (hereinafter referred to as the "application") received on March 5, 1991 as amended through August 13, 1993, which provided a description of the wastewater characteristics and proposed treatment. If new information is received subsequent to the date of this document, these substantive requirements may be revised if necessary to protect the receiving waters consistent with the Act and the Michigan Act.

Although the Surface Water Quality Division acknowledges that a National Pollutant Discharge Elimination System (NPDES) permit is not required for on-site remedial actions associated with Superfund cleanups, an NPDES permit shall be required to authorize any discharges from this site under any circumstances not exempted by CERCLA Section 121(e)(1).

Date: May 21, 1993
Modified: September 16, 1994
Modified: March 2, 1995


Robert Miller, Chief
Surface Water Quality Division

PART I

A. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

1. Final Effluent Limitations, Outfall 001

Beginning May 21, 1993, subject to Part I.A.3. of this document, the discharger is authorized to discharge a maximum of three hundred thousand (300,000) gallons per day of treated groundwater through outfall 001 to an unnamed tributary to the Grand River (Roy's Creek). Such discharge shall be limited and monitored by the discharger as specified below:

Effluent Characteristic	Discharge Limitations		Other Limitations		Monitoring Requirements	
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Measurement Frequency	Sample Type

INFLUENT MONITORING AND REPORTING

Purgeable Halocarbons (ug/l)	(report)	(report)	Weekly	Grab
Purgeable Aromatics (ug/l)	(report)	(report)	Weekly	Grab
Polychlorinated Biphenyls (PCBs) (ug/l)	(report)	(report)	Monthly	Grab
2,3,7,8-TCDD (ug/l)	(report)	(report)	Monthly	Grab
Mercury (ug/l)	(report)	(report)	Monthly	Grab

INTERMEDIATE STAGE MONITORING AND REPORTING

Purgeable Halocarbons (ug/l)	(report)	(report)	Weekly	Grab
Purgeable Aromatics (ug/l)	(report)	(report)	Weekly	Grab
Polychlorinated Biphenyls (PCBs) (ug/l)	(report)	(report)	*	Grab
2,3,7,8-TCDD (ug/l)	(report)	(report)	*	Grab
Mercury (ug/l)	(report)	(report)	*	Grab

DISCHARGE LIMITATIONS, MONITORING AND REPORTING

FLOW (MGD)	(report)	(report)	Daily	Report Total Daily Flow
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Purgeable Halocarbons	(report)	Weekly	Grab
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The discharger shall analyze for all purgeable halocarbon pollutants using U.S. EPA Test Method 601 or approved equivalent. The discharger shall report all Method 601 parameters.

No individual pollutant concentration shall exceed five (5) ug/l as a daily maximum.

Purgeable Aromatics	(report)	Weekly	Grab
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The discharger shall analyze for all purgeable aromatic pollutants using U.S. EPA Test Method 602 or approved equivalent. The discharger shall report all Method 602 parameters.

No individual pollutant concentration shall exceed five (5) ug/l as a daily maximum.

Benzyl Alcohol	38 ug/l	1000 ug/l	Weekly	Grab
Polychlorinated Biphenyls (PCBs)	0.00002 ug/l		*	24-hr composite
2,3,7,8-TCDD	0.000018 ug/l		*	24-hr composite

(continued)

PART I

Section A.1. (continued)

Effluent Characteristic	lbs/day		Other Limitations		Monitoring Requirements	
	Monthly Average	Daily Maximum	Monthly Average	Daily Maximum	Measurement Frequency	Sample Type
Phenols				(report)	Monthly	24-hr composite
The discharger shall analyze for all phenolic pollutants using U.S. EPA Test Method 604 or approved equivalent. The discharger shall report all Method 604 parameters.						
Polynuclear Aromatic Hydrocarbons				(report)	Monthly	24-hr composite
The discharger shall analyze for all polynuclear aromatic hydrocarbon pollutants using U.S. EPA Test Method 610 or approved equivalent. The discharger shall report all Method 610 parameters.						
Total Arsenic			19 ug/l		Weekly	24-hr composite
Total Cadmium			1.4 ug/l		Weekly	24-hr composite
Total Copper			42 ug/l	110 ug/l	Weekly	24-hr composite
Amenable Cyanide			9.1 ug/l	47 ug/l	Weekly	24-hr composite
Total Lead			21 ug/l		Weekly	24-hr composite
Total Mercury			0.0013 ug/l		*	24-hr composite
Total Nickel			130 ug/l		Weekly	24-hr composite
Total Selenium			8.8 ug/l		Weekly	24-hr composite
Total Silver			1.8 ug/l	20 ug/l	Weekly	24-hr composite
Total Zinc			190 ug/l	490 ug/l	Weekly	24-hr composite
Equipment, discharge and receiving water inspection				(report)	3X Weekly**	Visual

*See Part I.A.1.c.

**Two of the three weekly inspections may be accomplished by using remote monitoring equipment with autodial telephone capabilities. At least one weekly inspection shall be accomplished through physical site visits by qualified personnel. The remote monitoring equipment shall be approved by the Grand Rapids District Supervisor of the Surface Water Quality Division prior to installation of the equipment.

	Daily Minimum	Daily Maximum		
pH (Standard Units)	6.5	9.0	Monthly	Grab
Dissolved Oxygen	4.0 mg/l		Monthly	Grab

a. Analytical Testing: The sampling procedures, preservation and handling, and analytical protocol for compliance monitoring for mercury, PCBs and 2,3,7,8-TCDD shall be in accordance with EPA Methods 245.1, 608 and 613, respectively. The detection limits shall not exceed 0.2 ug/l, 0.1 ug/l and 10 ppq, respectively, unless higher levels are appropriate because of sample matrix interference. The following metals shall be analyzed using U.S. EPA approved test methods with the detection limits as indicated in ug/l: Total Arsenic - 1 ug/l, Total Cadmium - 0.2 ug/l, Total

(continued)

PART I

Section A.1.a (continued)

Copper - 20 ug/l, Amenable Cyanide - 5 ug/l, Total Lead - 1 ug/l, Total Nickel - 5 ug/l, Total Selenium - 2 ug/l, Total Silver - 0.5 ug/l, and Total Zinc - 50 ug/l. All other parameters shall be analyzed using U.S. EPA approved methods with detection limits appropriate for the limitations imposed. Equivalent test methods may be used upon approval of the Grand Rapids District Supervisor of the Surface Water Quality Division. Test procedures for the analysis of pollutants shall conform to regulations published pursuant to Section 304(h) of the Act, under which such procedures may be required.

b. Prohibited Discharges: The receiving stream shall contain no unnatural turbidity, color, oil film, floating solids, foams, settleable solids, or deposits as a result of this discharge.

c. Mercury, PCBs & 2,3,7,8-TCDD Discharge Levels and Monitoring Frequency: The water quality-based effluent limitations for mercury, PCBs and 2,3,7,8-TCDD are less than the level of detection using the specified analytical methods. Any discharge of mercury, PCBs or 2,3,7,8-TCDD at or above the level of detection at the intermediate activated carbon stage is a specific violation of the substantive requirements. If all the samples in any monthly reporting period are less than the level of detection, the discharger will be considered to be in compliance with the final effluent limitations for these pollutants for that reporting period, provided that the discharger is also in full compliance with the mercury, PCBs and 2,3,7,8-TCDD demonstration programs set forth in Part I.A.3. This paragraph does not authorize the discharge of mercury, PCBs or 2,3,7,8-TCDD at levels which are injurious to the designated uses of the waters of the state or which constitute a threat to the public health or welfare. [Total PCBs shall be defined as the sum of Aroclors 1242, 1254, and 1260. In addition, any detected Aroclor-specific measurements shall be reported.]

Upon initiation of discharge, the influent shall be monitored and sampled monthly for mercury, PCBs & 2,3,7,8-TCDD as specified in Part I.A.1. of this document. After one (1) year and if all the monthly samples have been non-detectable for mercury, PCBs and/or 2,3,7,8-TCDD, the influent monitoring frequency for mercury, PCBs & and/or 2,3,7,8-TCDD may be reduced to once per year. Any time groundwater from a purge well that was not previously contributing to the influent is added to the influent, then the influent shall again be monitored and sampled monthly for mercury, PCBs & 2,3,7,8-TCDD for one (1) year. If any monthly or yearly sample is detectable for mercury, PCBs and/or 2,3,7,8-TCDD, then the influent, the intermediate stage and the effluent shall be monitored and sampled monthly, for those compounds that are detected, for the life of this document. The discharger shall notify the Grand Rapids District Supervisor of the Surface Water Quality Division in writing any time there is a change in monitoring frequency.

d. Monitoring Frequency: Upon initiation of discharge, the influent, the intermediate stage, and the effluent shall be monitored and sampled at the frequency indicated in Part I.A.1. of this document. After one (1) year and if steady state conditions have been achieved, the discharger may request a reduction in monitoring frequency. This request shall be submitted to the Grand Rapids District Supervisor of the Surface Water Quality Division. Upon receipt of written approval, and consistent with such approval, the discharger may reduce the monitoring frequency indicated in Part I.A.1. of this document. The monitoring frequency shall not be reduced to less than once per month for purgeable halocarbons and purgeable aromatics. Other parameters shall not be reduced to less than once per quarter. This paragraph shall not apply to monitoring frequencies for mercury, PCBs & 2,3,7,8-TCDD. That is specified in Part I.A.1.c.

(continued)

PART I

Section A.1. (continued)

e. Monitoring Points: Samples, measurements, and observations taken in compliance with the monitoring requirements above shall be taken prior to treatment for all influent monitoring, between the carbon stages for intermediate stage monitoring, and after treatment but prior to mixing with any other waste stream for all effluent monitoring.

f. Proper Operation and Maintenance: The discharger shall operate the multi-stage activated carbon treatment system so that replacement of activated carbon within the primary bed shall occur upon break-through of pollutants (indicator parameters 1,1-dichloroethane and trichloroethene) into the final treatment stage, and the flow will subsequently be reversed such that the primary unit will become secondary and the secondary unit will become primary.

g. Reporting Unusual Characteristics of the Discharge: Any unusual characteristics of the discharge (i.e., unnatural turbidity, color, oil film, floating solids, foams, settleable solids, or deposits) shall be reported immediately to the Grand Rapids District Supervisor of the Surface Water Quality Division followed with a written report within 5 days detailing the findings of the investigation and the steps taken to correct the condition.

h. Water Treatment Additives: In the event the discharger shall require the discharge of water treatment additives, the discharger shall notify the Grand Rapids District Supervisor of the Surface Water Quality Division. The discharger shall obtain written approval from the Grand Rapids District Supervisor to discharge such additives at a specified level. The document may be modified in accordance with the requirements of Part II.B.4. if a constituent of the additive or additives requires limiting.

2. Special Condition - Best Available Treatment

The treatment technology based effluent limits for pollutants contained in this document are based on the discharger providing a multi-stage activated carbon treatment system. A multi-stage activated carbon treatment system is considered 'Best Available Treatment' (BAT) for remediations involving organic chemicals. The multi-stage activated carbon treatment system shall be designed, operated and maintained to produce a discharge with expected levels of the pollutants of concern below normal analytical detection. If treatment other than a multi-stage activated carbon treatment system is proposed, the discharger shall amend the proposed treatment description received on March 5, 1991 as amended through August 13, 1993. The substantive requirements may then be modified to include additional effluent limitations to protect water quality in accordance with the requirements of Part II.B.4. of this document.

Prior to construction the discharger shall provide the Grand Rapids District Supervisor of the Surface Water Quality Division a basis of design, construction plans, and specifications for the proposed treatment system.

Prior to commencement of discharge the discharger shall notify the Grand Rapids District Supervisor of the Surface Water Quality Division and provide a copy of the operations and maintenance manual for the constructed treatment system.

PART I

Section A.

3. Special Condition - Mercury, PCBs and 2,3,7,8-TCDD Demonstration Program

Prior to initiating a discharge, the discharger shall provide a demonstration that the mercury, PCBs and 2,3,7,8-TCDD monthly average limits will be met at the point of discharge. This demonstration may be accomplished through direct analytical measurement of the influent and/or effluent, a demonstration of the mercury, PCBs and 2,3,7,8-TCDD removal efficiencies for the treatment system, or another method approved by the Grand Rapids District Supervisor of the Surface Water Quality Division. Prior to conducting a demonstration, a plan describing the demonstration shall be submitted to the Grand Rapids District Supervisor of the Surface Water Quality Division. Upon receipt of written approval from the Grand Rapids District Supervisor of the Surface Water Quality Division, the discharger shall conduct the demonstration. After satisfactory demonstration that the mercury, PCBs and 2,3,7,8-TCDD monthly average limits will be met and upon receipt of written approval from the Grand Rapids District Supervisor of the Surface Water Quality Division, the discharge from outfall 001 is authorized subject to the limits and conditions of this document.

4. Special Condition - Chronic Toxicity Testing

To satisfy the aquatic toxicity-related requirements of Rule 57 of the Michigan Water Quality Standards, the effluent from outfall 001 shall not exceed 1.75 chronic toxic units (TU_C). "Chronic toxic unit" is defined as the reciprocal of the effluent's maximum acceptable toxicant concentration (MATC) expressed with 100 as the numerator and the MATC as a percentage in the denominator. Maximum acceptable toxicant concentration is defined in Rule 43(q) of the Part 4 Rules of the Michigan Act.

a. On or before November 1, 1994, the permittee shall submit a biomonitoring plan outlining specific chronic toxicity testing and reporting procedures to the Grand Rapids District Supervisor of the Surface Water Quality Division for approval. The plan shall include four chronic toxicity tests on two test species using final effluent from outfall 001. The toxicity tests shall be conducted once every 2 months after approval of the biomonitoring plan. Test species shall include fathead minnow and either Daphnia or Ceriodaphnia (alternate test species may be used upon approval of the Grand Rapids District Supervisor). Testing and reporting procedures shall follow procedures contained in EPA/600/4-89/001, "Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms", for fathead minnow and Ceriodaphnia; or ASTM E 1193-87, "Standard Guide for Conducting Renewal Life-Cycle Toxicity Tests with Daphnia magna", for Daphnia (alternate procedures may be used upon approval of the Grand Rapids District Supervisor). The chronic toxicity tests shall be conducted and reported such that the acute toxicity of outfall 001 can be determined. Acute toxicity data shall be included in the reporting of the chronic toxicity test results.

b. The permittee may supplement the toxicity testing described in paragraph a. by conducting toxicity testing of unaltered (prior to dechlorination and temperature adjustment) effluent. In the absence of such supplemental test results, the Surface Water Quality Division may consider the following, in addition to the altered effluent test results required in paragraph a., in the development of permit requirements: (1) the chlorine content of the effluent, (2) the temperature of the effluent, and (3) the toxicity (if any) of the ambient receiving water.

c. The permittee shall implement the biomonitoring plan within 60 days after approval of the Grand Rapids District Supervisor.

(continued)

PART I

Section A.4. (continued)

d. The final report on the tests conducted under paragraph c. shall be submitted to the Grand Rapids District Supervisor within one month after completion of the final test.

e. The Surface Water Quality Division will review the toxicity data submitted by the permittee to determine if the toxicity requirements of Rule 57 are being satisfied.

(1) If the result of any one test exceeds 1.75 TU_C , the following requirements apply.

(a) The permittee shall immediately terminate the discharge from outfall 001 and notify the Grand Rapids District Supervisor of this action.

(b) Within sixty (60) days the permittee shall submit to the Grand Rapids District Supervisor a plan for achieving compliance with the toxicity requirements of Rule 57. The plan shall specify the appropriate measures to be taken to comply with the toxicity requirements of Rule 57 and a schedule for implementation of those measures.

(c) Prior to resuming discharge, the permittee shall demonstrate to the Grand Rapids District Supervisor that adequate measures have been taken to consistently achieve the toxicity requirements of Rule 57 for outfall 001 and receive written approval from the Grand Rapids District Supervisor for resuming the discharge from outfall 001.

(d) Upon resuming discharge, the permittee shall conduct quarterly chronic toxicity tests on the final effluent from outfall 001 for the life of the permit.

(2) If the toxicity requirements of Rule 57 are close to being exceeded, upon written notification by the Grand Rapids District Supervisor, the permittee shall conduct quarterly chronic toxicity tests on the final effluent from outfall 001 for the life of the permit.

(3) When quarterly testing is required for the life of the permit, the tests shall be conducted and reported as specified in paragraph a. The results of such tests shall be attached to the monthly Discharge Monitoring Reports (DMRs). After 1 year the monitoring frequency may be reduced upon approval of the Grand Rapids District Supervisor if the test data indicate that the toxicity requirements of Rule 57 are consistently being met. Upon approval of the Grand Rapids District Supervisor, the chronic toxicity tests may be performed using the more sensitive species selected from the chronic toxicity database produced in paragraph c. If a more sensitive species cannot be identified, the chronic toxicity tests shall be performed with both species.

The Surface Water Quality Division will review the toxicity data submitted by the permittee to determine if the toxicity requirements of Rule 57 are being satisfied. If the toxicity requirements of Rule 57 are not being met, upon written notification by the Grand Rapids District Supervisor, the conditions of paragraph e.(1) apply.

f. This permit may be modified in accordance with Part II.B.4. to include additional whole effluent toxicity control requirements as necessary.

PART I

Section A.

5. Special Condition - Written Notification Required

Within 14 days of every requirement date specified in this document, the discharger shall submit a written notification to the Grand Rapids District Supervisor of the Surface Water Quality Division indicating whether or not the particular requirement was accomplished. If the requirement was not accomplished, the notification shall include an explanation of the failure to accomplish the requirement, actions taken or planned by the discharger to correct the situation, and an estimate of when the requirement will be accomplished. If a written report is required to be submitted by a specified date and the discharger accomplishes this, a separate written notification is not required.

6. Special Condition - Discharge to the Groundwaters

This site is a known source of groundwater pollution. This document does not authorize any discharge to the groundwaters or venting of contaminated groundwaters to the surface waters, nor does it constitute a release of liability for any groundwater contamination at or around the site. The State reserves its rights to seek remedies to abate any groundwater contamination.

7. Special Condition - Reopener Clause

This document may be modified to comply with any applicable standard(s) or limitation(s) promulgated under Section 301(b)(2)(c)(d), 304(b)(2) and 307(a)(2) of the Act, if the effluent standard(s) or limitation(s) so promulgated:

- a. is(are) either different in condition or more stringent than any effluent limitation in the document; or
- b. control(s) any pollutant not limited in the document.

8. Special Condition - Notification Requirement

The discharger shall notify the Grand Rapids District Supervisor of the Surface Water Quality Division, in writing, within 10 days of knowing, or having reason to believe, that any activity or change has occurred or will occur which would result in the discharge of:

- a. Detectable levels* of chemicals on the current Michigan Critical Materials Register or priority pollutants or hazardous substances set forth in 40 CFR 122.21, Appendix D, which were not acknowledged or listed at less than detectable levels.**
- b. Detectable levels* of any other chemical not listed or listed at less than detection, for which information was specifically requested.
- c. Any chemical at levels greater than five times the average level reported.**

*The detectable level shall be defined as the Method Detection Limit (MDL) as given in Appendix B to Part 136, Federal Register, Vol. 49, No. 209, October 26, 1984, pp. 43430-31.

**The information received on March 5, 1991 as amended through August 13, 1993, which provided a description of the wastewater characteristics and proposed treatment.

PART I

B. MONITORING AND REPORTING

1. Representative Sampling

Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge.

2. Reporting:

a. DMR Submittal Requirements - The discharger shall submit Discharge Monitoring Report (DMR) forms to the Michigan Department of Natural Resources, Surface Water Quality Division, Data Entry Unit, P.O. Box 30273, Lansing, Michigan 48909, for each calendar month of the authorized discharge period(s). The DMRs shall be postmarked no later than the 10th day of the month following each month of the authorized discharge period(s).

3. Definitions

a. The monthly average discharge is defined as the total discharge by weight, or concentration if specified, during the reporting month divided by the number of days in the reporting month that the discharge from the production or commercial facility occurred. If the pollutant concentration in any sample is less than the detection limit, regard that value as zero when calculating monthly average concentration. When less than daily sampling occurs, the monthly average discharge shall be determined by the summation of the measured daily discharges by weight, or concentration if specified, divided by the number of days during the reporting month when the samples were collected, analyzed and reported.

b. The daily maximum discharge means the total discharge by weight, or concentration if specified, during any calendar day.

c. The Grand Rapids District Supervisor of the Surface Water Quality Division's mailing address is Grand Rapids State Office Building, 6th Floor, 350 Ottawa Street, N.W., Grand Rapids, Michigan 49201.

4. Recording Results

For each measurement or sample taken pursuant to the requirements of this document, the document shall record the following information:

- a. The exact place, date, and time of measurement or sampling;
- b. The person(s) who performed the measurement or sample collection;
- c. The dates the analyses were performed;
- d. The person(s) who performed the analyses;
- e. The analytical techniques or methods used;
- f. The date of and person responsible for equipment calibration; and
- g. The results of all required analyses.

PART I

Section B.

5. Additional Monitoring by Discharger

If the discharger monitors any pollutant at the location(s) designated herein more frequently than required by this document, using approved analytical methods as specified above, the results of such monitoring shall be included in the calculation and reporting of the values required in the Discharge Monitoring Report. Such increased frequency shall also be indicated.

6. Records Retention

All records and information resulting from the monitoring activities required by this document including all records of analyses performed and calibration and maintenance of instrumentation and recordings from continuous monitoring instrumentation shall be retained for a minimum of three (3) years, or longer if requested by the Grand Rapids District Supervisor of the Surface Water Quality Division.

PART II

A. MANAGEMENT REQUIREMENTS

1. Duty to Comply

All discharges authorized herein shall be consistent with the terms and conditions of this document. The discharge of any pollutant identified in this document more frequently than or at a level in excess of that authorized shall constitute a violation of the substantive requirements.

It is the duty of the discharger to comply with all the terms and conditions of this document. Any noncompliance with the Effluent Limitations, Special Conditions, or terms of this document constitutes a violation of Public Acts 245, of 1929, as amended, and/or PL 92-500, as amended, and constitutes grounds for enforcement action.

2. Change of Conditions

Any anticipated facility expansion, production increases, or process modification which will result in new, different, or increased discharges of pollutants must be reported by submission of new information to the Chief of the Permits Section of the Surface Water Quality Division. Following such notice, the document may be modified to specify and limit any pollutant not previously limited.

3. Containment Facilities

The discharger shall provide facilities for containment of any accidental losses of concentrated solutions, acids, alkalies, salts, oils, or other polluting materials in accordance with the requirements of the Michigan Water Resources Commission Rules, Part 5. This requirement is included pursuant to Section 5 of the Michigan Water Resources Commission Act 245, P.A. of 1929, as amended, and the Part 5 Rules of the General Rules of the Commission.

4. Operator Certification

The discharger shall have the waste treatment facilities under direct supervision of an operator certified by the Michigan Department of Natural Resources, as required by Section 6a of the Michigan Act.

5. Noncompliance Notification

If, for any reason, the discharger does not comply with or will be unable to comply with any daily maximum and/or minimum effluent limitation specified in this document, the discharger shall provide the Grand Rapids District Supervisor of the Surface Water Quality Division with the following information, in writing, within five (5) days of becoming aware of such condition:

- a. A description of the discharge and cause of noncompliance; and
- b. The period of noncompliance, including exact dates and times; or, if not corrected, the anticipated time the noncompliance is expected to continue, and the steps taken to reduce, eliminate and prevent recurrence of the noncomplying discharge.

PART II

Section A.

6. Spill Notification

The discharger shall immediately report any spill or loss of any product, by-product, intermediate product, oils, solvents, waste material, or any other polluting substance which occurs to the surface waters or groundwaters of the state by calling the Department of Natural Resources 24-hour Emergency Response telephone number, 1-800-292-4706 (calls from out-of-state dial 1-517-373-8166); and within ten (10) days of the spill or loss, the discharger shall submit to the Grand Rapids District Supervisor of the Surface Water Quality Division a full written explanation as to the cause and discovery of the spill or loss, clean-up and recovery measures taken, preventative measures to be taken, and schedule of implementation. This requirement is included pursuant to Section 5 of the Michigan Water Resources Commission Act 245, P.A. of 1929, as amended.

7. Facility Operation

The discharger shall at all times properly operate and maintain all treatment or control facilities or systems installed or used by the discharger to achieve compliance with the terms and conditions of this document.

8. Adverse Impact

The discharger shall take all reasonable steps to minimize any adverse impact to the surface or groundwaters of the state resulting from noncompliance with any effluent limitation specified in this document including, but not limited to, such accelerated or additional monitoring as necessary to determine the nature and impact of the discharge in noncompliance.

9. Bypass, Upset and Noncompliance Notification

Diversion from or by-pass of treatment facilities is prohibited. If a process "upset" (defined as a n exceptional incident in which there is unintentional and temporary noncompliance with the technology based effluent limitations because of factors beyond the reasonable control of the discharger) has occurred, the discharger who wishes to establish the affirmative defense of upset shall notify the Grand Rapids District Supervisor of the Surface Water Quality Division by telephone within 24 hours of becoming aware of such conditions and within five (5) days, provide in writing, the information identified in 40 cfr 122.41(n)(3). In any enforcement proceedings the discharger, seeking to establish the occurrence of an upset, has the burden of proof.

10. Removed Substances

Solids, sludges, filter backwash, or other pollutants removed from or resulting from treatment or control of wastewaters shall be disposed of in a manner such as to prevent any pollutant from such materials from entering navigable waters, or the entry of toxic or harmful contaminants thereof onto the groundwaters in concentrations or amounts detrimental to the groundwater resource.

PART II

B. RESPONSIBILITIES

1. Right of Entry

The discharger shall allow the Grand Rapids District Supervisor of the Surface Water Quality Division and/or their authorized representatives, upon the presentation of credentials:

- a. To enter upon the discharger's premises where an effluent source is located or in which any records are required to be kept under the terms and conditions of this document; and
- b. At reasonable times to have access to and copy any records required to be kept under the terms and conditions of this document; to inspect any monitoring equipment or monitoring method required in this document; and to sample any discharge of pollutants.

2. Transfer of Ownership or Control

In the event of any change in control or ownership of facilities from which the authorized discharge emanates, the discharger shall notify the succeeding owner or controller of the existence of this document by letter, a copy of which shall be forwarded to the Grand Rapids District Supervisor of the Surface Water Quality Division.

3. Availability of Reports

Except for data determined to be confidential under Section 308 of the Act and Rule 2128 of the Water Resources Commission Rules, Part 21, all reports prepared in accordance with the terms of this document shall be available for public inspection at the offices of the State Water Pollution Control Agency. As required by the Act, effluent data shall not be considered confidential. Knowingly making any false statement on any such report may result in the imposition of criminal penalties as provided for in Section 309 of the Act and Sections 7 and 10 of the Michigan Act.

4. Substantive Requirement Modification

This document may be modified for cause including, but not limited to, the following:

- a. Violation of any terms or conditions of this document;
- b. Obtaining this document by misrepresentation or failure to disclose fully, all relevant facts; or
- c. A change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

PART II

Section B.

5. Toxic Pollutants

Notwithstanding Part II.B.4. above, if a toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is established under Section 307(a) of the Act for a toxic pollutant which is present in the discharge and such standard or prohibition is more stringent than any limitation for such pollutant in this document, this document shall be revised or modified in accordance with the toxic effluent standard or prohibition and the discharger so notified.

6. Severability

The provisions of this document are severable, and if any provision of this document, or the application of any provision of this document to any circumstances, if held invalid, the application of such provision to other circumstances, and the remainder of this document, shall not be affected thereby.

APPENDIX C

SITE

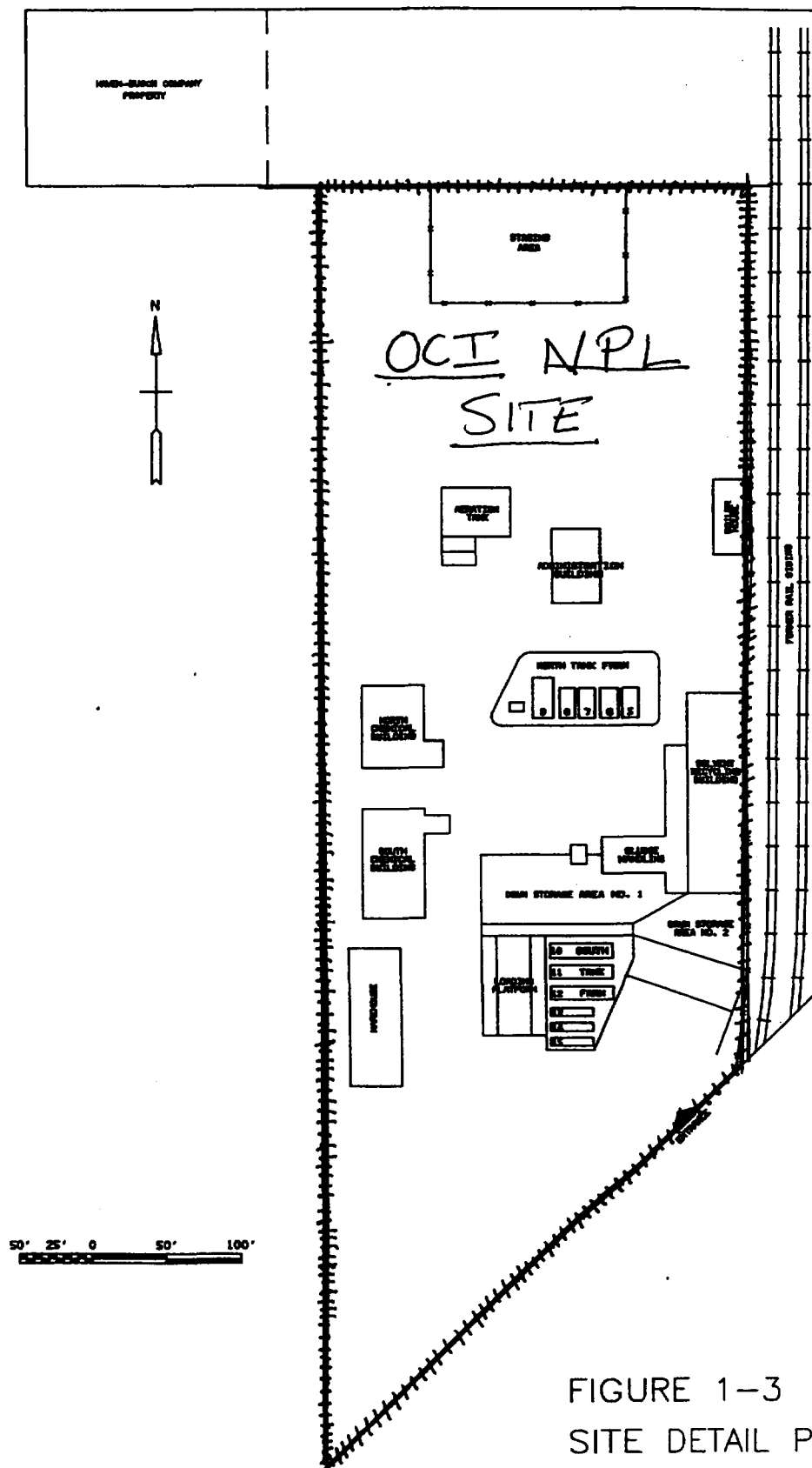


FIGURE 1-3

SITE DETAIL PLAN = *cross-hatched area*

APPENDIX D

APPENDIX D

Settling Defendants

Fort James Operating Company f/k/a James River Paper Company, Inc.
Cynthia V. Bailey
Fort James Corporation
P.O. Box 2218
Richmond, VA 23217

Du-Wel Products
Charles E. Barbieri
Foster, Swift, Collins & Smith
313 South Washington Square
Lansing, MI 48933

The Leslie Metal Arts Company, Inc. a/k/a Lescoa Manufacturing Co.
Mark Davis
Varnum, Riddering, Schmidt & Howlett
Bridgewater Place
P.O. Box 352
Grand Rapids, MI 49501-0352

Wilson Sporting Goods Co.
Michael Elam
Rudnick & Wolfe
203 N. LaSalle Street, Ste. 1800
Chicago, IL 60601

National Aluminum Corporation d/b/a Hastings Aluminum
James M. Ginocchi
Thorp, Reed & Armstrong
One Riverfront Center
Pittsburgh, PA 15222

Chemcentral Corporation, an Illinois corporation, successor to
Chemcentral Corporation, a Michigan corporation d/b/a Chemcentral - Grand Rapids,
and successor to Chemcentral Corporation, an Ohio corporation
d/b/a Chemcentral - Toledo
Robert Garner
Chemcentral
P.O. Box 730
Bedford Park, IL 60499

Keeler Brass Company
Mark Davis
Varnum Riddering Schmidt & Howlett
Bridgewater Place
P.O. Box 352
Grand Rapids, MI 49501-0352

E. I. du Pont de Nemours and Company
Barbara U. Gravely
DuPont Legal, D-7083
1007 Market Street
Wilmington, DE 19898

Lilly Industries, Inc., successor to Guardsman Products d/b/a American Aerosol
Sean Griggs
Barnes & Thornberg
1313 Merchants Bank Bldg.
11 S. Meridian Street
Indianapolis, IN 46204

Abitibi Price Corporation
R. Craig Hupp
Bodman, Longley & Dahling
34th Floor, 100 Renaissance Ctr.
Detroit, MI 48243

Kraft Foods, Inc., successor to General Foods Corporation d/b/a Carton & Container
Tom Giller
Kraft Foods, Inc.
Three Lakes Drive, (NF 362)
Northfield, IL 60093-2753

Steelcase Inc. on its own behalf and as successor to Stow & Davis Furniture Company
Dave Rinard
Steelcase Inc.
P.O. Box 1967
Mail Code PS
Grand Rapids, MI 49501-1967

Ford Motor Company
Ms. Kathy J. Hofer
Ford Motor Company
Three Parklane Blvd.
Ste. 1500 West
Dearborn, MI 48126-2493

The Crown Group, Inc. f/k/a Miller Metal Products
Dan Stanley
Honigman, Miller, Schwartz & Cohn
222 North Washington Square, Ste. 400
Lansing, MI 48933-1800

Pharmacia & Upjohn Company f/k/a The Upjohn Company
Joan Root
Pharmacia & Upjohn 1940-88-33
7000 Portage Road
Kalamazoo, MI 49001

BASF Corporation, on its own behalf and as successor to Inmont
Corporation and BASF/Wyandotte Corporation
Susan Sadler
Dawda, Mann, Mulcahy & Sadler, P.L.C.
1533 N. Woodward Avenue #200
Bloomfield Hills, MI 42484

Checker Motors Corp.
George Schumacher
Gemrich, Moser, Bowser, Fette & Lohrmann
222 S. Westnedge Avenue
Kalamazoo, MI 49007-4087

GenCorp Inc. f/k/a General Tire & Rubber
GenCorp Inc.
175 Ghent Road
Akron, OH 44313
Attn: John Finn

NL Industries, Inc. f/k/a National Lead Company d/b/a Doehler-Jarvis Company
Marcus A. Martin
% NL Industries, Inc.
1630 30th Street, Suite 598
Boulder, Colorado 80302

Viacom International Inc., successor to Furniture City Manufacturing and
Gulf & Western Industries
Jeffrey B. Groy
Viacom International, Inc.
111 East Broadway, Ste. 1100
Salt Lake City, UT 84111

TCI Pacific Communications, Inc., successor to Furniture City Manufacturing and
Gulf & Western Industries
Jeffrey B. Groy
Viacom International Inc.
111 East Broadway, Ste. 1100
Salt Lake City, UT 84111

International Paper, successor to Federal Paper Board
Mr. Eric G. Johannessen
6400 Poplar Avenue
Memphis, TN 38197

Welchwood Products
1539 N. Taylor
Grand Rapids, MI 49505

James Heddon & Sons
John Hagefstration
Bradley, Arant Rose & White
1400 Park Place Tower
Birmingham, AL 35203

Rapid Finishing
Mr. Gordon Martin
Rapid Finishing
3541 Kenowa, S.W.
Byron Center, MI 49315

MacDonald Industrial Products, Inc., successor to Superior Industrial Products
Melanie MacDonald-Parent
MacDonald Industrial Products
4242 44th Street, S.E.
Grand Rapids, MI 49512

Lowell Engineering
6151 Bancroft, S.E.
Alto, MI 49302

Rohm & Haas Company, Inc.
Ellen Friedell
100 Independence Mall West, 9th Floor
Philadelphia, PA 19106-2399

Elf Atochem North America, Inc. f/k/a Pennwalt Corporation, on its own behalf and as
successor to M&T Chemicals, Inc. and its former subsidiary, Stokes Equipment
Company
Kay Kefalas
2000 Market Street
Philadelphia, PA 19103-3222

SmithKline Beecham Corporation, a Pennsylvania corporation, successor to Smith Kline
& French Laboratories, and SmithKline Corporation
Paul R. Noll
One Franklin Plaza
P.O. Box 7929
Philadelphia, PA 19101

Harvard University Medical School
c/o Mary T. Feeney
Office of the General Counsel
Holyoke Center 980
1350 Massachusetts Avenue
Cambridge, Massachusetts 02138-3834

Witco Corporation, successor to Richardson Chemical Company
James A. Nortz
One American Lane
Greenwich, CT 06831-2559

Gulf Oil Chemicals

Robert Milhalovich
Chevron Research and Technology
1003 W. Cutting Blvd.
P.O. Box 4054
Richmond, CA 94804-0054

Onyx Chemical
Robert Milhalovich
Chevron Research and Technology
1003 W. Cutting Blvd.
P.O. Box 4054
Richmond, CA 94804-0054

Difco Laboratories, Inc.
Mike Turco
Cox Hodgman & Giarmarco
201 W. Big Beaver Road, #500
Troy, MI 48084-4160

Abbott Laboratories
Mary Beth Cyze/Susan Franzetti
Gardner, Carton & Douglas
Suite 3400 - Quaker Tower
321 N. Clark Street
Chicago, IL 60610-4795

General Electric Company, successor to Borg-Warner Chemicals
Alphonse McMahon, Legal Dept.
One Lexan Lane
Mt. Vernon, IN 47620

Boehringer Ingelheim Vetmedica, Inc., successor to
Philips Roxane, Inc.
Allyn Carnam
Boehringer Ingelheim Corporation
900 Ridgebury Road
Ridgefield, Connecticut 06877

Uniroyal Chemical Company
Susan Shumway
Shumway & Spencer, LLC
One Post Road
Fairfield Connecticut 06430

Koch Refinery Company, LP d/b/a Koch Chemical Company,
on its own behalf and as successor to Muskegon Chemical Company
c/o Travis Pearson
Koch Chemical Company
4111 East 37th Street North
Wichita, Kansas 67220

Tag Chemical, Inc.
Peter E. O'Rourke
O'Rourke & Myers, P.C.
1142 S. Main Street
Plymouth, MI 48170

Konica Graphic Imaging International, Inc., f/k/a Konica Imaging, U.S.A., Inc.,
f/k/a Chemco Technologies, Inc. f/k/a Powers Chemco, Inc. (a/k/a Powers Chemical
Company) f/ka Powers Photo Engraving Company
James T. Weiner
30600 Telegraph Road, Suite 3350
Bingham Farms, MI 48025-4533

Essex Group, Inc.
Jeffrey K. Haynes
VanderKloot, Rentrop, Martin, Haynes & Morrison, P.C.
74 E. Long Lake Road
P.O. Box 249
Bloomfield Hills, MI 48303-0249

APPENDIX E

APPENDIX E

Performing Settling Defendants

Fort James Operating Company f/k/a James River Paper Company, Inc.
Cynthia V. Bailey
Fort James Corporation
P.O. Box 2218
Richmond, VA 23217

Du-Wel Products
Charles E. Barbieri
Foster, Swift, Collins & Smith
313 South Washington Square
Lansing, MI 48933

The Leslie Metal Arts Company, Inc. a/k/a Lescoa Manufacturing Co.
Mark Davis
Varnum, Riddering, Schmidt & Howlett
Bridgewater Place
P.O. Box 352
Grand Rapids, MI 49501-0352

Wilson Sporting Goods Co.
Michael Elam
Rudnick & Wolfe
203 N. LaSalle Street, Ste. 1800
Chicago, IL 60601

National Aluminum Corporation d/b/a Hastings Aluminum
James M. Ginocchi
Thorp, Reed & Armstrong
One Riverfront Center
Pittsburgh, PA 15222

Chemcentral Corporation, an Illinois corporation, successor to
Chemcentral Corporation, a Michigan corporation d/b/a Chemcentral - Grand Rapids,
and successor to Chemcentral Corporation, an Ohio corporation
d/b/a Chemcentral - Toledo
Robert Garner
Chemcentral
P.O. Box 730
Bedford Park, IL 60499

Keeler Brass Company
Mark Davis
Varnum Riddering Schmidt & Howlett
Bridgewater Place
P.O. Box 352
Grand Rapids, MI 49501-0352

E. I. du Pont de Nemours and Company
Barbara U. Gravely
DuPont Legal, D-7083
1007 Market Street
Wilmington, DE 19898

Lilly Industries, Inc., successor to Guardsman Products d/b/a American Aerosol
Sean Griggs
Barnes & Thornberg
1313 Merchants Bank Bldg.
11 S. Meridian Street
Indianapolis, IN 46204

Abitibi Price Corporation
R. Craig Hupp
Bodman, Longley & Dahling
34th Floor, 100 Renaissance Ctr.
Detroit, MI 48243

Kraft Foods, Inc., successor to General Foods Corporation d/b/a Carton & Container
Tom Giller
Kraft Foods, Inc.
Three Lakes Drive, (NF 362)
Northfield, IL 60093-2753

Steelcase Inc. on its own behalf and as successor to Stow & Davis Furniture Company
Dave Rinard
Steelcase Inc.
P.O. Box 1967
Mail Code PS
Grand Rapids, MI 49501-1967

Ford Motor Company
Ms. Kathy J. Hofer
Ford Motor Company
Three Parklane Blvd.
Ste. 1500 West
Dearborn, MI 48126-2493

The Crown Group, Inc. f/k/a Miller Metal Products
Dan Stanley
Honigman, Miller, Schwartz & Cohn
222 North Washington Square, Ste. 400
Lansing, MI 48933-1800

Pharmacia & Upjohn Company f/k/a The Upjohn Company
Joan Root
Pharmacia & Upjohn 1940-88-33
7000 Portage Road
Kalamazoo, MI 49001

BASF Corporation, on its own behalf and as successor to Inmont
Corporation and BASF/Wyandotte Corporation
Susan Sadler
Dawda, Mann, Mulcahy & Sadler, P.L.C.
1533 N. Woodward Avenue #200
Bloomfield Hills, MI 42484

Checker Motors Corp.
George Schumacher
Gemrich, Moser, Bowser, Fette & Lohrmann
222 S. Westnedge Avenue
Kalamazoo, MI 49007-4087

GenCorp Inc. f/k/a General Tire & Rubber
GenCorp Inc.
175 Ghent Road
Akron, OH 44313
Attn: John Finn

NL Industries, Inc. f/k/a National Lead Company d/b/a Doehler-Jarvis Company
Marcus A. Martin
% NL Industries, Inc.
1630 30th Street, Suite 598
Boulder, Colorado 80302

Viacom International Inc., successor to Furniture City Manufacturing and
Gulf & Western Industries
Jeffrey B. Groy
Viacom International, Inc.
111 East Broadway, Ste. 1100
Salt Lake City, UT 84111

TCI Pacific Communications, Inc., successor to Furniture City Manufacturing and
Gulf & Western Industries
Jeffrey B. Groy
Viacom International Inc.
111 East Broadway, Ste. 1100
Salt Lake City, UT 84111

International Paper, successor to Federal Paper Board
Mr. Eric G. Johannessen
6400 Poplar Avenue
Memphis, TN 38197

Welchwood Products
1539 N. Taylor
Grand Rapids, MI 49505

James Heddon & Sons
John Hagefstration
Bradley, Arant Rose & White
1400 Park Place Tower
Birmingham, AL 35203

Rapid Finishing
Mr. Gordon Martin
Rapid Finishing
3541 Kenowa, S.W.
Byron Center, MI 49315

MacDonald Industrial Products, Inc., successor to Superior Industrial Products
Melanie MacDonald-Parent
MacDonald Industrial Products
4242 44th Street, S.E.
Grand Rapids, MI 49512

Lowell Engineering
6151 Bancroft, S.E.
Alto, MI 49302

Uniroyal Chemical Company
Susan Shumway
Shumway & Spencer, LLC
One Post Road
Fairfield Connecticut 06430

APPENDIX F

RESTRICTIVE COVENANT

The Organic Chemical, Inc. Site PRP Group desires to implement a remedial action plan requiring institutional controls in the form of a restrictive covenant. The remedial action plan was developed as a result of a release of hazardous substances into the environment at the Organic Chemical, Inc. Superfund Site located at 3291 Chicago Drive, S.W., Grandville, Michigan, and was prepared pursuant to the provisions of a Consent Decree dated _____, filed at docket No. _____, in the U.S. District Court for the Western District of Michigan.

This Restrictive Covenant is filed with the Kent County Register of Deeds and covers land located in the City of Grandville, Kent County, Michigan, as legally described in the attached Exhibit A (the "Property"). This Restrictive Covenant defines the scope of land use and resource use limitations applicable to the Property.

This Restrictive Covenant is being filed by the below listed legal titleholder, who acknowledges receipt of good and valuable consideration therefore.

Now, Therefore the undersigned ("Titleholder") establishes the following restrictive covenants:

1. Titleholder shall not use or permit the use of the Property for residential purposes.
2. Titleholder shall not use or permit the use of groundwater beneath the Property as a source of drinking water, or for any other purpose whatsoever.
3. Titleholder shall not extract groundwater from the shallow aquifer and transfer it to an off-site location without characterizing that groundwater to determine if it can be relocated without posing a threat to the public health, safety, or welfare or the environment.
4. Titleholder shall prevent a conveyance of title, an easement, or any other interest in the Property from being consummated without adequate and complete notice to the transferee of the nature and extent of any existing contamination, and the restrictions set forth in items 1, 2, and 3 above.
5. Titleholder grants to the Michigan Department of Environmental Quality (MDEQ) and the Organic Chemical, Inc. Site PRP Group and their designated representatives the right to enter the Property at reasonable times for the purpose of performing the remedial action plan and monitoring compliance with the above restrictions.

6. The MDEQ and/or the Organic Chemical, Inc. Site PRP Group may enforce the restrictions set forth above by legal action in a court of appropriate jurisdiction.
7. The restrictions and other requirements described in this Restrictive Covenant shall run with the land and be binding on the Titleholder's successors, assigns, and lessees or their authorized agents, employees or persons acting under their direction or control. The restrictions shall apply until the U.S. EPA determines that regulated substances in the groundwater at the Property no longer present an unacceptable risk to the public health, safety or welfare or to the environment. The Titleholder shall provide a copy of this Restrictive Covenant to all of its heirs, successors, assigns and transferees.
8. This Restrictive Covenant shall not be amended, modified, or terminated except by a written instrument executed by and between the Titleholder (or the Titleholder's successors or assigns) at the time of the proposed amendment, modification or termination, and the Organic Chemical, Inc. Site PRP Group. Within five (5) days of executing an amendment, modification or termination of the Restrictive Covenant, the Organic Chemical Inc. Site PRP Group shall, at its sole cost and expense, record such amendment, modification or termination with the Kent County Register of Deeds.
9. Unless and until Titleholder is notified otherwise, notices required by this Restrictive Covenant shall be sent to the Organic Chemical, Inc. Site PRP Group, c/o Alan C. Schwartz, Miller, Johnson, Snell & Cummiskey, P.L.C., 250 Monroe Avenue, N.W., Ste. 800, Grand Rapids, Michigan 49503.

The undersigned person, if executing this Restrictive Covenant on behalf of the Titleholder, represents and certifies that he or she has been duly authorized and has been fully empowered to execute and deliver this Restrictive Covenant.

By: _____
Legal Titleholder or Authorized Representative's Signature

Date

Print Legal Titleholder or authorized Representative's Name

Its: _____

Address: _____

IN WITNESS WHEREOF, the Titleholder of the above described property has caused the Restrictive Covenant to be executed on the ____ day of _____, 1999.

Signed in the presence of:

Witness

Witness

Print Witness' Name

Print Witness' Name

Subscribed and sworn to before me this ____ day of _____, 1999,

Date

_____, _____ County, Michigan.

Notary Public

(Insert County)

APPENDIX G

APPENDIX G

NonPerforming Settling Defendants

Rohm & Haas Company, Inc.
Ellen Friedell
100 Independence Mall West, 9th Floor
Philadelphia, PA 19106-2399

Elf Atochem North America, Inc. f/k/a Pennwalt Corporation, on its own behalf and as
successor to M&T Chemicals, Inc. and its former subsidiary, Stokes Equipment Company
Kay Kefalas
2000 Market Street
Philadelphia, PA 19103-3222

SmithKline Beecham Corporation, a Pennsylvania corporation, successor to Smith Kline
& French Laboratories, and SmithKline Corporation
Paul R. Noll
One Franklin Plaza
P.O. Box 7929
Philadelphia, PA 19101

Harvard University Medical School
c/o Mary T. Feeney
Office of the General Counsel
Holyoke Center 980
1350 Massachusetts Avenue
Cambridge, Massachusetts 02138-3834

Witco Corporation, successor to Richardson Chemical Company
James A. Nortz
One American Lane
Greenwich, CT 06831-2559

Gulf Oil Chemicals
Robert Milhalovich
Chevron Research and Technology
1003 W. Cutting Blvd.
P.O. Box 4054
Richmond, CA 94804-0054

Onyx Chemical
Robert Milhalovich
Chevron Research and Technology
1003 W. Cutting Blvd.
P.O. Box 4054
Richmond, CA 94804-0054

Difco Laboratories, Inc.
Mike Turco
Cox Hodgman & Giarmarco
201 W. Big Beaver Road, #500
Troy, MI 48084-4160

Abbott Laboratories
Mary Beth Cyze/Susan Franzetti
Gardner, Carton & Douglas
Suite 3400 - Quaker Tower
321 N. Clark Street
Chicago, IL 60610-4795

General Electric Company, successor to Borg-Warner Chemicals
Alphonse McMahon, Legal Dept.
One Lexan Lane
Mt. Vernon, IN 47620

Boehringer Ingelheim Vetmedica, Inc., successor to
Philips Roxane, Inc.
Allyn Carnam
Boehringer Ingelheim Corporation
900 Ridgebury Road
Ridgefield, Connecticut 06877

Koch Refinery Company, LP d/b/a Koch Chemical Company,
on its own behalf and as successor to Muskegon Chemical Company
c/o Travis Pearson
Koch Chemical Company
4111 East 37th Street North
Wichita, Kansas 67220

U.S. ENVIRONMENTAL
PROTECTION AGENCY

FEB 17 2000

OFFICE OF REGIONAL
COUNSEL